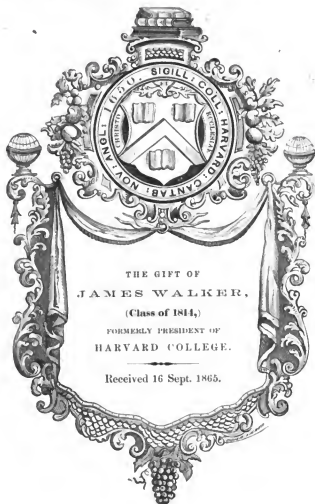


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TEN

INTRODUCTORY LECTURES

DELIVERED AT THE OPENING OF THE

— UNIVERSITY OF LONDON,

BY THE FOLLOWING PROFESSORS:

DR. CONOLLY,
ON THE NATURE AND TREATMENT OF DISEASES.

DR. GRANT,
ON COMPARATIVE ANATOMY AND ZOOLOGY.

REV. THOMAS DALE, M.A.
ON THE ENGLISH LANGUAGE AND LITERATURE.

REV. DR. LARDNER,
ON NATURAL PHILOSOPHY AND ASTRONOMY.

DR. MÜHLENFELS,
ON THE GERMAN AND NORTHERN LANGUAGES AND LITERATURE.

PROFESSOR LONG,
ON THE GREEK LANGUAGE, LITERATURE, AND ANTIQUITIES.

PROFESSOR HURWITZ,
ON THE HEBREW LANGUAGE AND LITERATURE.

PROFESSOR GALIANO,
ON THE SPANISH LANGUAGE AND LITERATURE.

PROFESSOR LINDLEY,
ON BOTANY.

DR. SMITH,
ON MEDICAL JURISPRUDENCE.

SESSION 1828—9.

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Rev. James Freeman D.D.

of Cambridge,

(76. C. 1814.)

UNIVERSITY OF LONDON.

DR. CONOLLY'S
INTRODUCTORY LECTURE.

AN
INTRODUCTORY LECTURE
DELIVERED IN
THE UNIVERSITY OF LONDON,

On THURSDAY, OCTOBER 2, 1828.

By JOHN CONOLLY, M.D.

PROFESSOR OF THE NATURE AND TREATMENT OF DISEASES.

FOURTH EDITION.

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INTRODUCTORY LECTURE.

GENTLEMEN,

UNDER any circumstances, I should have felt considerable embarrassment in addressing so numerous an assembly, containing so many distinguished individuals as I see around me. But this feeling is very much increased by the circumstance of my accidentally following, in the order of succession, the very eminent gentleman * who yesterday addressed you from this place; a gentleman whose character as an accomplished, eloquent, and rarely-gifted teacher, and whose celebrity as one of the first physiologists of his time, have been so long and so generally acknowledged, that it is neither indelicate thus to allude to them, nor any dishonour to confess that I cannot hope to give much interest to a lecture intended for medical students, after the beautiful discourse we so lately heard from him.

The duty that I have undertaken in the Chair to which I have had the honour to be appointed in this University, is to teach the **NATURE AND TREATMENT OF DISEASES.**

The students who attend these lectures are supposed, generally, to have some previous acquaintance with certain branches of medical study; not only with Anatomy and Physiology, the very foundations of all medical science, but with so much at least of Chemistry and Botany as relate to the *Materia Medica*.

But the Anatomy of the human body in a sound state, and Physiology, or the science of its healthy functions, having been previously explained to them, they are now to

* Professor Bell.

be taught the changes of structure and the interruptions of function which constitute disease. Chemistry and Botany, in connection with the history of the nature and properties of the materials drawn from the mineral, vegetable, and animal kingdoms for medical purposes, having given them a general view of the powers of which physicians have availed themselves, in order to restore health when either structure or function was impaired; they have now to study, by the help of this and of other practical Chairs, the *application*, combination, and adaptation of these powers, and whatever bears upon the management of every form of malady to which human beings are liable. This is the *end* to which all their former labours have been directed; an end not to be attained without a previous devotion of time to the means just enumerated, and from a connection with which all their previous studies derive their principal value.

It is my business, therefore, to enter into the history of diseases; to explain their causes, as far as they have been discovered; to describe their varieties, as far as they have been observed; to point out their symptoms, their distinctive features, their tendencies, their results: and then to instruct my pupils in what manner these evils are to be met; how resources are to be used or devised against them; how their causes are to be averted or destroyed; how the effects are to be distinguished; how their results are to be prevented or removed.

I should justly be suspected of taking a very imperfect view of my duties, if, on commencing such a task, so important, so extensive, I did not feel and acknowledge a deep sense of the responsibility I have incurred;—if I did not confess, that ever since I was elected to this office, I have been anxiously occupied in reflecting upon the best means of performing its duties so as to be useful to those who come to me for instruction.

In the introductory part of my Course, I shall so far depart from custom as to say very little on the mere *History*

of Medicine; not from any particular love of novelty, but from a conviction that its details will be more advantageously introduced, because more readily and clearly comprehended, if presented from time to time, when I have to speak of separate diseases. Even those who are now entering on the study of medicine, and for whom a slight retrospect of the fluctuations it has undergone constitutes an essential introduction to the subject, as well as to any exposition of my plan of treating it, would be wearied, far more than profited, if I were to dwell long on its past revolutions, when they are naturally full of anxiety to know something of its present state.

It is, moreover, not easy to give a clear, orderly, connected view of the past history of medicine. Its progress from an acquaintance with a few remedies to its present advanced state, has not been made by sure and regular steps; it has neither been steady, nor, strictly speaking, gradual. There has often been, as a great authority* has remarked, "iteration, with small addition; a circle, rather than progression." In both medicine and surgery, (although the progress of the latter branch has been steadier, and at all times less mystified and pretending than that of physic,) we find so much anciently known, or supposed, which was afterwards forgotten, or lost, or accidentally obscured, and again, and even more than once, revived as new, that an attempt to disentangle the discoveries in either, and to place them in a true chronological series, would be one of the greatest difficulty. Such an attempt would be by no means uninteresting as a part of medical literature, but certainly not a proper employment of the time of those who attend here for the purpose of learning the Nature and Treatment of Diseases.

Of the origin of medicine we have no distinct account; but it cannot be doubted that it began with simple and accidental experience. Very soon it ceased to be a science

* Lord Bacon.

of observation ; and its first corruption seems to have arisen from the fears and the ignorance of men, uncivilised, untaught, exposed to various accidents, unable to account for any of the phenomena of the natural world around them, and dependent on a superior power, of which they knew nothing.

In no long time, the dominion of error was extended by the pleasure arising from the indulgence of fancy compared with the labour of exercising the other faculties ; by vanity also, and the natural love of what is wonderful. Men were not wanting who boldly assumed a peculiar insight into the nature and influences of unknown powers ; and although, more than two thousand years ago, Hippocrates left the vain speculations of the philosophers (who aspired to be pathologists without the lights of anatomy and physiology,) and looked at the actual effects and progress of disease ; although he gathered up the scattered knowledge of his time, arranged it, and exceedingly enriched it by his own acute and exact observation ; his labours were repeatedly counteracted, and physic was again and again corrupted, and its very profession made contemptible in after ages, by the sophists of Greece, by the scholastic declaimers of Alexandria, and by numerous speculative men in various countries and of various periods, who found it easier and more agreeable to adopt the splendid reveries of men of genius, than to examine and judge for themselves. Thus we see that opinions were sometimes taken up upon trust, and that doubts and cavils were sometimes raised without reason or wisdom ; and in both cases facts disregarded, loose analogies pursued, the distinctions of diseases neglected, the effects of medicines confounded, imaginary qualities ascribed to various insignificant substances on the slightest grounds ; —and thus too we trace, from age to age, a long succession, interchange, and implication of ingenious theories, each raised on, or formed out of, the ruins of its predecessor, and each in turn thrown down to furnish materials, or form an unsound basis for the next.

Yet there are few among the theories which have in turn flourished and decayed, in which you will not find that there was *something* reasonable and true, which was curiously perverted; or something valuable, which was capriciously discarded. You will often detect the same theory under the disguise of new names; and sometimes see, that, except in name, contending sects differed little from each other. It is instructive to observe, and important to remember, that physicians have approached, in a kind of succession, near to almost every Physiological and Pathological fact, long before its complete establishment; and that, after catching a glimpse of truth, they have again and again given themselves up to imagination, which they should have kept in strict subservience, as a valuable auxiliary; and no longer having modest and faithful observation for their guide, have wandered from the path of useful discovery, and been led irretrievably astray.

Throughout all these deviations and caprices, a more intimate acquaintance with the structure and functions of the body was promoted, and the effects of medicines became better understood. The pride of originality, the zeal of theory, the very fanaticism of hypothesis, stimulated the cultivators of medicine to greater exertions: the errors of one sect served as lessons to another; and the contentions of opposing parties often laid open the sources of truth.

At last, after repeated efforts to reduce the illimitable varieties of the human œconomy to the rules by which other parts of nature were governed; after many attempts to apply elementary, chemical, mathematical, mechanical, humoral, and other doctrines to the living body; physicians have become convinced, that in the functions of life, there is something more than mere elementary mixture; something more than a mere collection of vascular agents; of solids and fluids, and moving powers; and that, although to a certain extent the laws of many sciences are to be found in force within the bodily fabric, there are vital actions and laws of life independent of, and superior to them,

that there is a peculiar and a finer science of living and rational beings.

It can only be after you have become more fully acquainted with the present and past state of medicine, that you can form a just idea of the real improvement it has undergone within the last two centuries. You will then see how great a revolution has been effected; how jargon and mystery have been gradually (I wish I could say *entirely*) banished; how parade and confusion have given way to clearer views of disease, and the employment of plainer and more intelligible language; how carefully, by the labours of many great men, some of whom yet survive to behold the effects of their honourable labours, the structure of all the parts of the human frame have been in later times investigated; its various and intricate functions how diligently inquired into: how cautiously the “footsteps and impressions” of maladies have been traced in the dead body; how the foundations of medicine have been cleared, how what was unsound has been rejected, what was worthy to be retained placed in a better light, and all the rubbish of the darker ages swept away. Then also you will find what valuable assistance has, during this time, been given to medicine by many other sciences which have been daily becoming more exact;—and will acknowledge how justified we are in saying, that as a *result* of all this—a result in which mankind have a deep interest,—a more rational *Practice* has prevailed. You will learn that as the Nature of Diseases has become better understood, their Treatment has become more rational and more successful; so that the character of many has been mitigated; whilst some, of which the visitations and wide-spreading were formerly justly dreaded, have been entirely banished from among us; and, notwithstanding the greater diffusion of some causes of disease, arising out of greater wealth, greater luxury, greater intellectual exertion, the value of human life is in every way increased.

These beneficial changes have not been brought about easily or readily, without much labour, many retrogres-

sions, and some violent struggles. Even so retired a study as medicine, as it could not be preserved from the subtilities and wildness of the schoolmen, so it did not escape further interruption from the intemperateness and obstinacy of faction. Philosophy, no less than religion, has occasionally been deformed by idolatry, and degraded by bigotry; and medicine has not escaped the like inconveniences.

There have also been, at all times, some physicians professedly opposed to the theories of all sects, whose boast it has been that they relied only on *experience*. The division of medical practitioners into Rational and Empirical, is of very ancient date. As science has advanced, the Rational physicians have continually gained more and more upon their opponents; because, without despising experience, they have always endeavoured to ascertain the causes of what they witnessed. The question between the two parties remains, in other respects, the same as it always was; for as the annals of medicine teach us that to reason without being secure of facts is of all things the most likely to lead us into error, so it is self-evident that to found reasoning upon facts, to examine and compare them, to deduce from them certain principles for our direction, is the only way to make them useful. Without this employment of them, the hugest collection would be of little service, and the longest experience unproductive of wisdom. The avowed despisers of theory and reasoning therefore, who appeared to be justified in former periods by the extravagance of the party opposed to them, have been always found in later times practically defective; daily pursuing the same measures, and repeating the same faults; relying upon the supposed infallibility of their own methods; inobservant of the consequences of their own practice; shutting their ears to all information, and opposing a stubborn scepticism to all professional improvement.

The particulars on which the preceding remarks are founded will be brought before you hereafter. They have been thus alluded to because even so slight a survey of the

revolutions, errors, and prejudices, which have attended the cultivation of the science upon which you are now entering, cannot but guard you in the outset against hasty conclusions, and dispose you at once to examine thoroughly the theories now prevalent, and often to be alluded to, and to accept truths by whomsoever you may find them offered. To record the progress of medicine would indeed be a mere waste of time, if it did not teach both you and me how to proceed, and reveal the method of avoiding faults which have misled so many who have gone before us; if it did not dictate to *me* the plan I ought at this day to pursue, and if it did not convince *you* of the intricacy and difficulty of the study of medicine, of the propriety of humility, of the necessity of patient labour, and of being animated in your own investigations by an ardent love of truth, and a proud desire to advance your science rather than yourselves.

It is my earnest hope that the pupils of the Medical School of the University now first opened in this great capital, but destined, I trust, to flourish among the institutions which adorn and benefit it, for many ages after those who first engage in its honourable duties shall be no more, will be no less distinguished by the laudable ambition which directs their labours, than by the zeal with which those labours are pursued: that they will despise the miserable vanity of announcing what is new, without a scrupulous regard to its being true; that whilst they think boldly, they will examine their first thoughts carefully; and remembering that observation is always difficult, and experience itself often fallacious, whilst they attempt to attain to causes through their effects, and the laws which regulate those effects, will reason on what they observe with circumspection, feeling no anxiety except to discover what may be beneficial to their patients: that respecting, not blindly worshipping antiquity, combining the ardour of students with the modesty proper to men commencing an important study, they will not too hastily substitute their own authority for that of those whose experience was more extensive; or commit

themselves prematurely to any theories, from which a false sense of shame may hereafter prevent their ever being disentangled; but will avail themselves of the opportunities which will here be afforded, of verifying their remarks by repetition, of discussing them with one another, of appealing to those whose opinions they regard, and who have found, as *they* will find, that many confident conclusions of youth require modification in future years; and, suppressing a restless fondness for what is new and strange, will still remember that the science they cultivate is far from complete, and that *they* may possibly be able to advance it.

The profession to which you have devoted yourselves, Gentlemen, requires for its successful prosecution, not a suppression of the higher faculties of the mind, but an union of them, with a facility of applying the facts discovered in many sciences to a practical art of the utmost importance to your fellow-creatures. No profession calls for so accurate an observation, retention, and valuation of so great a variety of single facts; and to excell in it demands the most diligent exercise of your senses, a well-directed attention, indefatigable and careful comparison, a faithful memory, an imagination suggesting all probabilities for scrutiny, but disciplined and restrained. If medicine merely consisted of the application of a few known remedies to diseased states of the human frame, simple in their character and easily recognised, there would be little in it which occasional attention or a few months' study would not enable you to master. But your task is far more extensive and delicate. As Nature does not abound in abrupt transitions, so slight deviations from health constitute incipient disease; slight aggravations modify it, alter its character, graduate its severity, induce or avert danger: and these changes are indicated by corresponding, and often very subtle variations of external phænomena, as well as influenced by innumerable remedial means. Thus the distinction of diseases is often difficult; the probable result in many cases not easily foretold; and their treatment requires constant and

serious attention: and supposing you all to be well grounded in Anatomy and Physiology, without which sciences all attempts to understand anything of physic must necessarily be vain; the shades of difference by which, as practitioners, you will be distinguished from one another, will yet take their final colour from your superior discernment of states and stages of disease, and from the readiness, or I may say the felicity, with which, out of an immense variety of materials, you select such as are exactly adapted to the combination of symptoms and individual constitution of the patient whom you have to treat.

I have now to speak of the mode in which it seems to me that students may be best conducted to this desirable end by those who are intrusted with their medical education; or rather, of the plan and arrangement of my own lectures, and of the method of teaching which I myself propose to adopt.

In determining on the plan I have laid down for myself, I have been governed by this feeling,—that my labours here were to be carried on for the benefit of others, rather than for any immediate return of praise to myself. Viewing, as deliberately as I could, the present state of medicine, and the present necessities of students, I have not thought it incumbent upon me slavishly to copy even the most distinguished examples among past or living medical teachers;—to copy them is not to imitate them—but to consider, as no doubt they well considered, what is required in my own time, and in the actual state of our science, and to aim at supplying it.

A perfect order of the subjects to be treated of in a course of lectures on Medicine would be based on a knowledge of the Proximate Causes of all the diseases to be spoken of, or of those peculiar actions to which the term *proximate cause* has been, I think disadvantageously, yet very long and generally applied. Whatever may hereafter be in the power of a lecturer, our present knowledge of proximate causes

(or, as I should say, of primary morbid effects or actions) is not sufficiently exact; our acquaintance with the intimate structure and functions of the different parts of the body is too incomplete, to furnish him with a foundation sufficient to support a durable superstructure, and he must select one less exposed to movement and change. It is even questionable whether such an arrangement would ever be the best for him to follow who has to combine the Art with the Science of medicine.

After considering, therefore, not without anxiety, what might be the best arrangement, one which would serve the purpose not of students only, but of men who are to *practise* what they learn; an arrangement by which external phenomena or symptoms would become readily, because habitually, associated with the system or set of organs affected in each case, and with the means to be adopted for relief,—for these, Gentlemen, are the objects of your study, and must be always the first objects of my teaching;—it seemed to me that no arrangement would better answer these ends, would less involve the lecturer in the pursuit of false reputation, or his hearers in useless disputes concerning classification; none would approach more nearly to an arrangement by which all arbitrary associations and disjunctions of diseases would be avoided, and the first parts of the course would prepare for those which were to follow,—than one founded on *Physiology*.

It is therefore my design to speak of diseases in the order in which the functions are observed in the living body, from the first moment of life to the reproduction of a creature destined to perpetuate the species. First, consequently, I shall speak of diseases of the Circulating System, sanguineous and lymphatic; then of the diseases of the Respiratory function and organs; then of diseases of the Brain, Spinal Marrow, Nerves, organs of Sense and Motion; then of diseases affecting Nutrition and Evacuation; and lastly, of diseases of the Reproductive or Generative System.

I do not insist on the exclusive value of this arrange-

ment. It is impossible to begin anywhere without this inconvenience, that things must sometimes be alluded to, which have not been explained. The connections of the different systems of the human body are so numerous, their reciprocal influences so incalculably many, that with no set of organs or class of functions can we commence, which, although primary in some points of view, are not secondary in others. We have to describe a circle, and may begin in any part of it. Other arrangements may have been preferable in other times, and a better may possibly hereafter be practicable. I take medical science in its existing state, and adopt the arrangement of its subjects which seems to me best fitted to its present advancement.

The order I have chosen will have one very evident advantage: it will embarrass the student with no hypotheses concerning either structure or function. When, in his first practical attempts, a disease is presented to his observation, we all know, who have made those attempts, that he does not search his memory for a definition in order to understand such disease; that he does not seek its place in any artificial classification; but that he first inquires what functions or what organs are disordered:—the circulating, the respiratory, the digestive, the intellectual, the sensorial, the muscular, the generative;—and he will surely find his inquiry facilitated by having studied the disease, whatever it may be, in its natural place. He takes into his view many circumstances; and by a comparison of them determines the nature of the case: and it is surely desirable to avoid impeding him with imposing divisions, and names hostile to the recognition of disease in its effects, effects which he is to endeavour to remove. If, as commonly happens, two or more organs or functions are affected, he will be equally well prepared, by his previous study of disease as fully described to him, to discover which affection was the first in order, to discover whether that which was primary is yet in his power, or which demands his chief attention. Some disorders are of a nature to affect various structures,

and consequently to appear in various organs, and to disturb various functions. These will be first treated of *generally*, and then as they affect particular parts. The general nature and treatment of Inflammation, for example, will be described in the First Division, as an affection of the Circulating System; but inflammation will also be spoken of in each of the other divisions in which it forms distinct diseases. Morbid formations will be arranged among the diseases of the parts or structures in which they most commonly appear, or which they most seriously affect.

Each of the *Five* divisions into which my Course is thus divided, will be commenced with a brief reference to such parts of what has been taught by the Professors of Anatomy and Physiology, as are inseparable from pathological considerations of a general character; or which require, from their close connection with the diseases of the division, to be distinctly and constantly kept in mind. Having done this, the functional or *physiological* irregularities, and the morbid appearances or *anatomical* changes found in the system comprehended in that division, will be summarily viewed. This retrospect and survey will generally occupy one lecture. Afterwards, when speaking of the different disorders of the division separately and fully, it is my intention, whenever it is practicable, to show and describe, sometimes with the help of recent specimens, sometimes in morbid preparations, often by faithfully executed drawings, the *effects* of the disease which is under consideration, or its pathological anatomy, in the incipient state of the disorder, in its progress, and in its ultimate stage. My care will be to associate these appearances with the symptoms which they produce, and by which they are to be recognised during life; and with this knowledge of effects and signs, it will not be difficult to connect rational views of medical treatment; such as in the first and second stages may lead to measures calculated to prevent further progress or produce a cure, and in the last to mitigate suffering and retard the approach of death.

In some diseases I must speak of what cannot be recognised in the dead body by our senses, but of the existence of which we have reason to be certain from the effects which we see during life. Many disorders of the nervous system are of this kind. Functional disturbance of any system or organ may continue long and leave no trace. The plan of illustration which I have mentioned will of course only be applicable to that aggravated state in which structural change supervenes on disorder of function.

In order to make the description of diseases available to the purposes of the student, it should not, I conceive, be merely systematic or historical, but should also represent them as they are most likely to be seen by the young practitioner. Thus, although the shivering, the bodily and mental languor, the wandering and unsettled pains which often precede the more marked symptoms of Fever, must not be omitted in the systematic description of that disease; the student must be warned that his assistance will most likely be required when these symptoms have passed away, when the patient is not in a state to recall them, and the more prominent and alarming phænomena of fever are developed, complete prostration of bodily power, violent affections of the head, or chest, or bowels, and a bewildered mind. He will be told, that cases still more perplexing will be presented to him, in which no local symptoms are strongly marked, but all the functions labour and are oppressed; in which the causes and the origin of the complaint are obscure, and its progress has been inaccurately marked. He will be further warned, that fevers sometimes commence with the local symptoms of common inflammatory disorders, and sometimes with the suddenness and some of the appearances of apoplexy.

It is my intention to dwell somewhat more fully on Mental Disorders, or, to speak more correctly, of disorders affecting the manifestation of mind, than has I believe been usual in lectures on the practice of medicine; and for many reasons. There is a very general opinion gaining ground,

that these dreadful disorders are more common than they formerly were. The consideration of them often involves the most important interests of families, and throws a heavy responsibility on the physician. I disapprove entirely of some parts of the usual management of lunatics. I also consider the distinction between Rationality and Insanity to be clearer and easier than it is generally represented, and look upon the singular and contradictory definitions which have on many occasions been publicly given, as so many proofs of the want of proper means of obtaining a practical acquaintance with insanity. In this important department, I trust I shall be enabled to afford opportunities to the student, for the first time in this country, of becoming familiar with the diversified aspects of this alarming malady ; and I cannot but hope that a great impulse will thus be given to the study of them, and that great general improvement will in a few years result in relation to our knowledge of these affections, to the advantage of the public, no less than to the honour of our medical school.

When detailing the modes of distinguishing one disease from another, I shall place before you those circumstances only which are the most surely established ; mentioning perhaps, but not dwelling much upon, sometimes passing over, those less certain, which the pride of affected perspicacity has occasionally proclaimed. I conceive that my first object is to put you in possession of such facts as are so securely fixed as to be serviceable in the first steps of practice. Thus, in speaking of the percussion of the chest by the fingers, or of the application of the ear to it, in order to ascertain the state of its contents, I shall in some affections dwell on the value of these methods of exploration, in others pass lightly over them,—in all notice them only as auxiliaries ; for I should be with much reason apprehensive of your doing great injury to the public, if, forgetting to acquaint you thoroughly with those symptoms which you can see, or which you can acquire a knowledge of by the sense of touch, I should trust your patients to

your discrimination of those to be derived from the sense of hearing. I should expect you, and, what you will find to be of more consequence, your patients will expect you, to be able to distinguish a severe catarrh, or bronchitis, an inflammation of the mucous lining of the air-passages, from an inflammation of their parenchymatous substance, or from an inflammation of the pleura, or membrane by which the lungs are covered, in most cases, by the general symptoms: but I should unquestionably wish you to be able to *verify* your diagnosis by the stethoscope and percussion, and thus, in cases apparently doubtful, acquire a certitude, I could almost say an *infallibility* of diagnosis unattainable by any other methods.

The same views will govern me in noticing the results of disease, or pathological anatomy. I shall take great pains to familiarize you with such as are the undoubted products of particular processes, more especially of such as are early indicated by particular symptoms, and which there is reason to think may be checked in their origin; such as you have to expect when particular symptoms present themselves, and such as you are to prevent or to cure. But I shall not dwell, lecture after lecture, on the infinite minutiae of morbid appearances; for if I did, I should be forgetting the chief object of my lectures. I by no means would discourage any pupil, who is not very anxious to become engaged in practice, from applying himself to morbid anatomy even as a distinct science; but in these lectures it must always be spoken of as a science subservient to that of preventing the changes which it exhibits.

In what I say concerning the Treatment of diseases I shall still keep the design of practical utility always as much as possible in view: it will be exposed as clearly as may be practicable in relation to symptoms and results, and according to such principles as seem to rest on the most fixed foundations, and to be applicable to the many indescribable modifications of morbid actions. Doubtful measures, new remedies, empirical experiments, will not be despised; but

their success will not always be considered as a proof of their being fit for general application : they may be noticed as deserving of future attention, but not to the neglect of things more certain, plain, and familiar, of which you will have immediate and hourly need. Undecided questions, yet the subject of warm or intemperate controversy, will be stated, with the chief arguments of the contending parties ; but the student will be rather exhorted to examine than urged to decide.

The lecturer can but give an outline, which the future industry of the student must fill up. His duty is not to repeat everything that has been said or written, but to analyse and simplify that which it is most important for you to learn ; to aid in the formation of opinions, rather than to dictate opinions ; and to furnish that information for which you will have instant necessity, in such a way as may induce you, and enable you, to add to it by your own subsequent industry. He is supposed to devote a great part of his time to the task of selecting, arranging, and condensing, from the voluminous records of physic, what it immediately or chiefly imports you to know, and to the more difficult labour of collecting out of the publications of his own time what is truly useful and really new ; rejecting without scruple what is delusive or uncertain, or so minute as to be useless to the practitioner. Remembering that to many of his hearers the subjects of which he treats are new, solely anxious to inform and direct, lecturing to his pupils and not for the public,—it is desirable that he should not only be clear in his conceptions and accurate in his information, but plain and precise in his expressions ; dreading nothing so much as to mislead his hearers, above all in medicine ; since not their knowledge alone, not mere speculative opinions, but their practice, the fate of their patients, may be influenced by what he says. Careless of the fame that may always be acquired by professing novel and ingenious doctrines, he must yet sometimes lead the way into the regions of speculation ; but he must know where

to stop, and not be afraid to confess that there are many things which he cannot explain, and which are yet to be elucidated.

Still, beyond these lessons, something is required to make them useful. It is not learning alone, or extensive reading, or any familiarity with verbal descriptions, which can prepare the student to know disease when he sees it, or to cure it when it is recognised. The materials for discourses on medicine are open to all; but it is the superiority of the modes of Clinical teaching, superadded to the ability of individual lecturers, which has given celebrity to the most famous schools; to those of Germany and of France, and I add with pleasure from my own experience, to the justly celebrated school of Edinburgh. In the Hospital and Dispensary attached to the University, constant, and I hope daily increasing, opportunities will be afforded of becoming practically acquainted with disease. *There* the justness of what you hear in these lectures must be finally tried, the principles laid down be applied to practice, and the last attempt made to lead the student step by step to act for himself. You will there be enabled to compare the different ways of obtaining the same ends, and be a witness of those occurrences which in the course of a disease so often modify the best concerted plans of treatment; and become convinced that there are no practical aphorisms to be acquired in the halls of learning, which are to be confidently acted upon without any further exercise of the understanding at the bedside of the sick. You will see that no part of the system can be long in disorder, without affecting the tranquillity of the rest; that complications beyond the power of any lecturer to enumerate are frequently met with; and that when you come to be engaged in practice you will often have to deal with cases described in no lectures, comprehended in no system of medicine, to which the most unquestionable principles of physic must be applied with caution, and in which the blind application of eternal rules of practice will be fatal to the patient:—you will find, in short,

that after obtaining a competent acquaintance with what is to be learnt from lectures, from books, and from an observation of the practice of others, the chief requisite for practising physic is what is commonly called *good sense*; by which I mean the vigilant and ready exercise of the understanding or judgment in all the accidents of practice, and a prompt adaptation of what you know, to what you have to do;—a possession consequently, which, though partly a gift of nature, is capable of great development by careful cultivation. In what relates to a practical art, industrious talent may acquire and arrange, genius may improve and adorn, but good sense must always direct.

Such is an outline of the principles and the manner according to which I conceive medicine requires to be taught in the present state of the science. The medical school of England, Gentlemen, has long stood honourably distinguished above all or most of the European schools, by being free from the trammels and language of any exclusive theory. If, in our anxiety to attain and preserve valuable practical truths, we have been sometimes too negligent of what were considered to be mere refinements, we have at least avoided the disgrace of giving protection to imposture, or a solemn sanction to the absurd delusions by which visionary or dishonest men have often, in other countries, found a way to fame. Our opportunities of anatomical investigation, and of observing the results of disease, have been limited, and unfortunately continue to be too much so, by the prejudice existing in this country against the examination of bodies after death: but at the same time, the diligence with which the opportunities we *have* enjoyed have been cultivated, the constant bearing which our pathological anatomy has had on the practical improvement of our profession, have left much less to regret than is imagined by those who merely consider the *opportunities* of dissection afforded on the continent:—and let it not be forgotten, that causes which it is satisfactory to reflect upon, have in reality contributed

to limit our opportunities—a greater regard even among our humble countrymen and women for those whom death has taken from their families, and a practice of medicine and surgery so zealous and direct as to prevent the excessive results of disease, and more powerfully to obviate what has been termed the “tendency to death.” I would entreat those who have been led into what I cannot but consider an unjust and even an unsafe preference of the foreign medical schools, to reflect what kind of men have been produced by the system followed in this country. I would beg them to observe the spirit and discernment, the union of zeal and judgment, with which medical investigations are carried on among us; the general character of those who practise the different branches of the profession; the estimation in which they are held in this country; and above all—for this is the greatest consideration of all—the effects of their labours on the lives of their patients. In exchange for these benefits, we should ill-receive, in my opinion, all that is offered to us by systems of education from which, although I acknowledge the diligent ambition resulting from them, all noble views seem to be too much shut out; in which at least (for I have no wish to encourage prejudice or to exaggerate any thing), exact and useful knowledge and good faith are not *more* conspicuous than in our own schools; but which call for more display, and for more ostentatious exhibitions, alien to the character of a serious study:—for as far as my own observation and experience have gone, I feel convinced, that it is not by public and formal efforts, by disputations, and competitions, and showy discourse, but by quiet observation long pursued, by careful, by repeated, by undisturbed reflection, and thought long unexpressed, that the medical student or practitioner works his arduous way to a knowledge of his profession.

Knowing myself to address many students who are commencing their studies in this metropolis, I shall not be departing from the proper limits of my duty if I de-

vote the remainder of the present lecture to observations of a general kind, chiefly connected with the habits and education proper or desirable for those who mean to study any of the branches of our profession.

The first habit to be recommended to all students is diligence, and to a medical student a diligent devotion of his mind to his proper profession. Whoever means hereafter to practise physic with comfort or credit; whoever would be consoled under the depressions incidental, I imagine, to the most judicious practice; must never forget that the sciences connected with it, and to which he is consequently introduced, are only valuable to *him* as the auxiliaries of his profession,—that they do not *make*, but only *assist* a physician. With this caution, the medical student cannot be too diligent. To him no mistake will be more detrimental than to underrate the homely virtue of industry; without which, in our profession, perhaps in any profession, no man ever attained to eminence. If some individuals, by the help of a brilliant imagination and certain powers of acquirement, have gained celebrity in spite of their notorious indolence, such men have done little for their profession, their country, or mankind, and have acquired no permanent or valuable fame; but the greatest men of all nations and times have been men of industrious or even of laborious habits. I have watched with much interest the fate and conduct of many of those who were pursuing their studies at the same time with myself. Of these, some were of course idle, and despised the secluded pursuits of the studious:—of such, I do not know *one* whose progress has been satisfactory: many of them, after trying various methods of dazzling the public, have sunk, already, into merited degradation. But I do not know one among those who were industrious, who has not attained a fair prospect of success: many of them have already acquired reputation; and some of them will doubtless be the improvers of their science in our own day, and remembered with honour when they are dead.

It would doubtless be most desirable that the general education of a student should end when his professional education commences. This, I fear, can seldom be the case with medical students. But the more carefully and liberally a youth has been educated, the more advantageously will he enter on his medical studies. I feel it incumbent upon me to express myself very unreservedly on the subject of Classical learning, because I know that it has often been represented as incompatible with professional ability, and a depreciation of it has, even within our own time, and in our own profession, been regarded as an expression of liberality; as the indication of a mind which, bowing to no authority, dared to assert its own freedom. These opinions, originating perhaps in the too evident waste of time when a knowledge of the dead languages is considered the principal object of a man's life, are yet erroneous and prejudicial.—Certainly, of all delusions, that of a man who, without any classical taste, any elegance of mind, any habits of literary life, affects to look down upon others because he had in his youth what is called a classical education, is the most ridiculous and the most unfortunate; for such a delusion keeps him in a state of profound and vulgar ignorance, and at the same time in a state of the most perfect satisfaction with himself. Far be it from me to be accessary to the continuance of such a pompous and useless prejudice.—But, Gentlemen, you cannot be familiar with the languages of Greece and Rome, without at the same time becoming familiar with the characters of some of the greatest men who ever lived, and the most exalted sentiments which the human mind ever conceived: nor can you be intimately acquainted with the beauty and accuracy of expression which characterize the best Greek and Roman writers, without becoming at the same time accustomed to the most admirable order and precision of thought.

Both languages were spoken and written in their greatest purity by nations which, though inferior in many points of private morals to the modern, were yet distinguished in

their time far above all the other people of the earth. When those languages became corrupt, public spirit had lamentably declined; and when they ceased to be heard, a moral darkness overspread the fairest parts of the world; the sciences, and medicine very remarkably, were neglected; the voice of wisdom and the splendours of poetry were either restrained or prostituted to the meanest purposes; and liberty was altogether extinguished. But when, after this dreary period, the barbarous models of the middle ages were put aside, and the noble languages of antiquity revived; not learning only, not only poetry and eloquence, but sciences and arts revived; the human mind seemed to receive an accession of strength; the moral and political condition of men improved; manners began to be purified and refined; the modern languages were polished into elegance; and, lastly, medicine was rescued from the slavery of imitation, and all those researches made, and all those reforms effected in it, which I have already said have marked the last two centuries. Since that revival, the most distinguished men in all countries have drank the deepest at these pure fountains; and even at present, an acquaintance with classical learning, an habitual intercourse with the orators, poets, philosophers, and physicians of past ages, is most conspicuous in those who are the first poets, orators, physicians and philosophers of our own.

To depreciate languages ever associated and cotemporary with advantages like these, is surely then a *false* liberality, and a mere affectation of practical wisdom; and instead of being likely to cherish feelings of true liberty, mental or political, has a direct tendency to make you view all institutions and all parts of learning with a narrow and prejudiced mind.

Seek then, I would say, or continue to keep up, an acquaintance with the languages of Greece and Rome. The latter is at least within your attainment, and a knowledge of it of the greatest utility to a medical student. If you have neglected it, let me persuade you to devote *one* hour

"a day to it during the whole period of your medical study ; such an occupation will form an agreeable relief after your other duties, and at the end of a few years you will be surprised to find how much that little sacrifice of time has enabled you to accomplish.

Very great advantage will attend your being acquainted with some of the modern European languages, particularly with French and German ; and the number may easily be increased when one or two are well learnt. Nor should I omit to mention an attention to the correct use of your own, of which many men proud of their classical attainments, and many medical writers, have been but too negligent. A man may assuredly be a very good physician, or a very good surgeon, without any knowledge of Greek and Latin, of French or German ; but if he cannot write his own language clearly, or speak it correctly, his writings and conversation will cast perpetual ridicule on what is considered a learned profession. And let the British student remember, that the English tongue yields to none in copiousness, in strength, and in variety ; that it is spoken more extensively than any other ever was, and has been employed to express the thoughts and deeds of men who will bear a comparison with the foremost men of all antiquity.

It is hardly necessary for me to observe, that a gentleman practising the higher branches of a liberal profession is expected to have a general acquaintance with modern literature, and some knowledge of what are called the Fine Arts. But it will also prove highly serviceable to him to have studied such parts of Natural Philosophy as explain some of the properties, functions, and capacities of the living body ; he will sometimes find it necessary to direct his thoughts to the Philosophy of the Human Mind ; his information will be much increased by an acquaintance with the very interesting studies of Comparative Anatomy and Zoology : neither should he be ignorant of Mathematics ; and he will often be materially assisted by possessing the accomplishment of Drawing. These acquirements, if they

do not all constitute indispensable parts of a complete medical education, may at least precede it with great benefit to the student. The habits of attention which such studies favour, and the store of ideas with which they furnish the student, strengthen, by exercising, his mind; and enable him to enter upon with less difficulty, and to comprehend more readily, the anatomy and physiology of the human body, and whatever relates to the practice of physic and surgery.

The studies which I have enumerated (for I have omitted many which have sometimes been insisted on) are not at all beyond your reach, provided your early years have been well spent, and you have learned to "pick up the fragments of your time;" nay, they may be graced and set off with many accomplishments, provided you have no attachment to low and debasing pursuits; provided that your ambition is a well regulated and steady principle, arising from your desire to do what is useful and good; and that your associates and even your amusements are well chosen.

I need not, I am sure, dwell on the advantage, now first known in London, of an University in which will be presented opportunities for the cultivation of any or of all the parts of knowledge which I have mentioned; situated too, in the midst of an intellectual capital, in which the student can never be driven, by the proscription of elegant and rational amusements, or the want of agreeable and virtuous society, to throw away his early life in low debauchery or vice;—an institution in which the mere parade of learning, or the most laborious perversion of talent, will be far less considered than the attainment of useful knowledge;—an institution in which it is professed, as I solemnly believe, without reserve or equivocation, that no sect, no party, no persuasion, no difference of rank, or fortune, or opinion, will be a bar to all the academical honours which a pupil may merit, or which can here be bestowed. You must be very inattentive to what is passing around you, if you are not convinced that the careful culture of the mind was never more necessary than it now is, for the preservation of the

rank in which you are placed, or for the attainment of a higher. Nor will you ever find that your acquisitions are barely equal to the expectations with which your efforts were commenced. Mental industry is always abundantly rewarded. New rays of intelligence, and clearer views of your duty, will be communicated to you from every side; and you will experience, I trust, that the cultivation of true knowledge has not only informed your understanding, but exalted your whole character.

Whatever may have been your past advantages or disadvantages, whatever may be the present state of your information—again I say, keep in your memory at all times that it is the *Practice* of your profession with which you have to do. Neglect nothing that may enrich your minds, or give you consideration, or improve your real happiness; but remember that the great business of your lives is “to learn what you can, and to do what you can, for the good and the comfort of the sick and the miserable.”* Let every day therefore be well employed; for though the time you have to spend in study now seems long, it will pass away quickly, and cannot return. Excuses are too often admitted by the student when he is conscious of his own indolence, and he promises himself that on another occasion that fault will be avoided; but days, and weeks, and months follow one another, and at last his opportunities are gone. Attend daily therefore, and regularly, both lectures and hospital practice; a day’s neglect breaks the chain, and makes many lectures unintelligible, and many cases uninteresting. Keep accurate and copious records of the cases you have time to attend to; review these records at stated periods, and make memorandums of what seems worthy of observation, preserving such notes arranged in alphabetical order, without which, or some such precaution, the more your manuscripts

* Life of Dr. Bateman.—I beg to recommend to the medical student the perusal of the very interesting work from which this expression is taken; and also of the Life of Dr. Baillie, prefixed to Mr. Wardrop’s Edition of his Works.

increase, the greater will be their confusion. Do not attempt to read many volumes, or distract yourselves with numerous authorities, or the countless cases related in medical writings. With a few of the ancient authors and some of the moderns I should wish you to be familiar, and these I will take opportunities of pointing out to you. But in general I would say, read little, observe carefully, and think much. Accustom yourselves also to write such remarks as seem to you to be new or otherwise worth preserving, never deferring doing so beyond the earliest moment of leisure you can command after the observation has been made. All men are accountable for their time, but none more than you. You will be hereafter liable to be called upon to act unassisted, or to assist others, in cases of sudden and great danger; and on your previous preparation, and on the state and temper of your mind, it must often depend whether the result be *life* or *death*. The sacrifices and exertions which these considerations render necessary, are surely more than compensated by the real importance, interest, and dignity of your art; by the value of which you may be to your fellow-creatures: for there is no pursuit which engages its followers in such a variety of delightful studies, for ends more directly useful to mankind. The ample page of all knowledge is thrown open to you, from whence to learn how to relieve the sufferings, restore or prolong the activity, and thus bless the existence of those about you.

Let me exhort you never to take *less* worthy views of the profession in which you have engaged, or at any time to become unduly sceptical of its powers. Those powers are indeed limited, but by no means visionary. Although there may be great difficulty in finding out the principles of the science, we may be assured they are no less exact than any by which other sciences are regulated. The leading characters of all the most serious diseases have been the same from the earliest æra of which we have any medical re-

cords ; the susceptibilities and the functions of the body, the properties of medicinal substances, the state of the earth and of the air, have undergone no change ; the faculties of the human mind, the springs of human affection and passion (with all which enlightened medicine has to do), have ever been the same. The *treatment* therefore of disease ought not to be wavering or uncertain ; ought not to present a broad and unnatural contrast to this great uniformity and constancy of nature. Nor will you find that it does so, if you confine your views to such treatment as can alone be accounted rational, and meet the varieties of disease by means which, though equally varied, are not adopted capriciously or incautiously, but suggested by such knowledge of the nature of diseases as you can acquire. Be assured, Gentlemen, that exercised with judgment, medicine will enable you to exert more controul over disease than you sometimes dare to hope. Many acute affections may be overcome and destroyed with what may almost be called certainty ; the progress of morbid formations of the most serious kind may be suspended, if not wholly prevented ; and in some cases effectually and wholly checked ; whilst in almost every case sufferings may be lessened, life rendered comfortable, and death delayed. Such, even at present, is the power of medicine ; and if we look at the apparent *intention* of the most fatal morbid processes, and consider the exhaustless stores of nature, and the daily productions of scientific pharmacy, we shall see much reason to believe that the powers of medicine may yet be greatly amplified ; that some diseases now considered the most intractable may hereafter become curable by art. The justifiable hope of being able to add to the resources of the physician or surgeon ; of being able to cure diseases now invariably fatal ; to relieve sufferings which now proceed uncontrouled ; and thus to become signal benefactors to your nation and to the world ; is surely sufficient to prevent your becoming desponding during your studies, or

inert in your daily practice. If there be any truth in these observations, you cannot be desponding without folly, or negligent without criminality.

It is, I hope, almost superfluous for me to explain that in making the observations I have done on the diligent employment of a medical student's time, and on the devotion of all his faculties to his profession, I have not meant to encourage or excuse the total neglect of more serious thoughts and occupations. God forbid, Gentlemen, that I should be supposed for a moment capable of joining in any hypocritical and odious cry, in which the sacred name of religion is employed to promote political ends and worldly interests, to justify persecution, and to excite the worst passions of men! But there *is* a religion which makes men better; and so much of your employment will be among the works of the Almighty hand, and you will have so many opportunities of rightly estimating at the bed of the sick and the dying the true value of all mere worldly considerations, that I trust I may without impropriety beseech you in the midst of your busy engagements, not to let your feelings be interested by these occupations in vain. Habitually engaged, as you will be, in doing good, I should wish you to be supported and directed in your exertions by an exalted sense of duty. This is the state of mind by which all the brightest characters in our profession were distinguished, and I pray that it may be yours.

As the rules of the University leave you one day in the week (Saturday) for the revision and arrangement of your notes, and for proper relaxation, you will not be under the necessity of employing any part of *Sunday* in that manner. On that day therefore, let all your medical occupations be put aside—your Hospital attendance, or visits to any poor patients under your care, excepted. Attend the services of religion. Examine how you are passing your time. Review and regulate your thoughts; and clear your minds of any animosities or discomposures which may have arisen during the week. Let the remainder of the day be passed

in the perusal of esteemed authors, or in the society of wise and good associates. You will then not only not lose a day, but will actually gain time, by the refreshment of your minds; and by the acquisition of that serenity, the want of which is most unfavourable to mental exertion, and which is never enjoyed except when we are quite at peace with ourselves.

Gentlemen, I have but one word more to say on the present occasion. You commence your studies when our professional body is agitated by many matters of great interest. Some of you may perhaps be persuaded, before your studies are completed, to take a part in proceedings or discussions having for their object certain changes in the medical constitution. On the propriety of these changes it would be unbecoming in me to offer any opinion in this place. But let me advise you to approach these subjects calmly, and not to give way to any feeling but a desire to do good to and to protect the whole body of the profession, and to benefit the public, of which that profession forms a part.

Beware how you allow your passions to be influenced by any, who, on the just ground that old establishments need occasional alterations, would really engage you in the destruction of what is useful as well as venerable. Hear the opinions of the old as well as of the young; compare one with another; and judge for yourselves. Leave, for the present, to others, the care of changes demanding time, which you have not to spare; experience, which you cannot be supposed to possess; patience, which does not belong to your age. Do not waste valuable hours, and neglect your present opportunities, in endeavouring to effect what only your seniors *can* effect,—hours which you can never recall, and opportunities which will never present themselves again; but will be looked back upon, if lost, with pain and regret as long as you live.

And, Gentlemen, above all things, when you are urged

to any particular line of conduct, let your first inquiry be concerning the character of those who are most active in it, and who are to be your associates. Ask yourselves if they be truly *honest* men. If they are not, have nothing to do with them in *any* cause, for they will corrupt the best. In all countries pretending to civilization and morality, people have long been convinced that the end, however laudable, does not justify unholy means. It may be your duty to endeavour to reform, but only if you can reform by honourable efforts. An ancient edifice may require repair, and repair might conduce to its safety; but if the few skilful workmen who alone could undertake this experiment of preservation be surrounded by a passionate and unscrupulous multitude, their wise efforts will be overborne, and no good end effected.

If you forget these truths, and become committed to the cause of injudicious, or selfish, or reckless men, be assured you will find, even in your own profession, a spirit which *will not tolerate you*; and by the public sense of this country you will be opposed and defeated in every step of your proceedings. The time has gone by, when in the comparative ignorance of the community at large, want of principle was occasionally tolerated because connected with highly cultivated talent. You live in days when not *knowledge* alone, but *character* is power; when knowledge without character can procure no more than temporary and very transient preeminence; and cannot save from final exposure and disgrace. Unjust suspicions may attach to an innocent man; the general consistency and integrity of his life will wipe them away; the imprudencies of youth may be repaired by the circumspection of middle age: but if you justly lose your reputation for probity and honour, you may struggle, and resist the great decree of public opinion; but you will find, whatever your attainments, whatever engaging qualities or natural endowments you possess, that your influence in society is gone, and that you are in all respects lost and ruined men.

We have reason to congratulate ourselves, Gentlemen, that we do live in a country and in times so favourable to the exercise of virtue. Let it be your constant ambition, then, to be esteemed and distinguished when esteem and distinction are not conferred even upon intellectual greatness, except when combined with, and elevated by, some approach towards moral excellence;—when not the mere possession of talent is a title to admiration, but that just employment of it, which, whilst it is truly useful to your fellow-creatures, and satisfactory to yourselves, can alone be pleasing to the Great and Good Being by whom so glorious a gift was imparted.

THE END.

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AN ESSAY
ON THE
STUDY OF THE ANIMAL KINGDOM.

BEING AN
INTRODUCTORY LECTURE
DELIVERED IN
THE UNIVERSITY OF LONDON,

ON THE 23RD OF OCTOBER, 1828

By ROBERT E. GRANT, M.D.

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UNIVERSITY OF LONDON.

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ADVERTISEMENT.

IN this Introductory Discourse, the objects and limits of Comparative Anatomy, Comparative Physiology, and Zoology, are defined. The extent and distribution of the Animal Kingdom are briefly described; and the connections of the study of animals with other branches of science are pointed out. The various uses of animals to man, and in the economy of nature, are enumerated, and also the pleasures and advantages derived from their study. The Lecture concludes with an outline of the Course of Comparative Anatomy and Zoology to be delivered in the University of London.

INTRODUCTORY LECTURE.

GENTLEMEN,

THE object of this Course of Lectures is to demonstrate the structure of Animals, to explain their Functions, to detail their History and Uses, and to illustrate the principles of their Classification.

These subjects constitute the departments of Physical Science, termed Comparative Anatomy or Zootomy, Comparative Physiology, and Zoology, which treat of the forms, the mechanism, the properties, the phenomena, and the relations of all the existing and extinct species of Animals known upon the earth.

The word Zootomy (derived from ζῷον, an *animal*, and τέμνω, to *cut*,) is employed to express the knowledge acquired by dissecting the bodies of animals. This science makes us acquainted with their organization, or with the structure and form of all their internal parts and organs. It points out the connexions which subsist between the different parts of the animal machine, by which they are all enabled to co-operate towards the same great objects—the preservation of the individual, and the continuance of the race. It examines the changes which the organs undergo at different periods of life, to suit them for the various stages of infancy, maturity, and decay. It traces the modifications of form and structure presented by the different organs and parts of the machine, in all the inferior tribes of animals, by which the whole organization of the species is always admirably adapted to the circumstances in which they are placed.

It points out the regular gradation in the forms of indi-

vidual organs, from their highly complicated and elaborate structure in Quadrupeds, to their simplest forms, and their total disappearance in the lower orders. It shows that, notwithstanding the highly complicated organization we observe in the more perfect animals, and the intimate connexion which subsists between all their parts, not one of all their organs is universal in the Animal Kingdom, or essential to the phenomena of animal life. The whole skeleton, the solid frame-work of the body, destined to give strength, form, and support to the entire machine, disappears in the class of Molluscous Animals,—as in the *Doris*, *Tritonia*, *Eolis*, &c. The muscular system, so essential to all the voluntary and involuntary movements of the higher classes, entirely disappears in the class of Radiated Animals, and with it every trace of nervous system which we are apt to suppose essentially connected with all the motions and functions of animals. The brain, so intimately connected with the phenomena of mind, after dwindling into the form of a few separate ganglia placed on the œsophagus, and connected only with the function of digestion, disappears from the Animal Kingdom. The heart, the great centre of the circulation, after diminishing successively the number of its cavities, from four to one, in the higher classes of animals, disappears among insects. The blood-vessels also cease to exist, and, with them, all circulating motion of the blood, as in most Radiated Animals, and in the whole class of Zoophytes. The function of respiration is intimately connected with the circulation of the blood, and its organs, after undergoing various modifications of form, suited to the different media in which the animals live, cease to belong to the system. Although the function of secretion is performed by animals very low in the scale, all distinct glandular organs for its performance are lost long before the total disappearance of an internal digestive cavity. Many of the lowest Zoophytes, which have no internal digestive sac, and no polypi, (which are only superficial digestive cavities,) absorb their

whole nourishment by the surface of their body, or by the parietes of canals which traverse their interior. The simplest gelatinous animalcules, which possess no internal cavity, are also reduced to superficial absorption, and thus form a transition to the mode of nourishment of the vegetable kingdom.

Besides describing the structure of all the inferior animals, and the changes which the organs and textures undergo at different periods of life, this branch of Anatomy examines the nature of the metamorphoses which various classes of animals undergo before arriving at their perfect state. And by comparing the adult organs of the inferior classes, with the embryo state of the same organs in the higher orders of animals, many extraordinary analogies are discovered, which throw much light on the functions of the parts, and serve to unravel the most complicated and difficult forms of organization. By tracing back, for example, the skeleton of fishes to that of quadrupeds and man, the true nature and uses of all their complicated arrangement of osseous parts have been discovered and ascertained. And by comparing the human brain in the earliest stages of its development, with the permanent forms of that organ in quadrupeds, birds, reptiles, and fishes, the most singular resemblances have been discovered, which throw a new light on the gradual development of that organ in the most perfect animals, and on its remarkable structure in the inferior classes.

By prosecuting these various enquiries, the views of the Anatomist become enlarged, the speculations of the Physiologist are corrected or extended, and new principles are discovered for the scientific arrangement of the Animal Kingdom.

Of all animals Man has the most elaborate and complicated organization, and the structure of his body has been a subject of constant observation and study, since the infancy of the human race. Though debarred from human dissection by superstition in the earliest times, the prac-

tice of physic and surgery, the process of embalming, the catastrophes of the field of battle, the accidents of common life, and the natural curiosity of man, as well as the constant habit of examining the structure of the inferior animals, had made men acquainted with the leading facts of human Anatomy before the period of Aristotle, who raised it to the dignity of a science ; and all his successors have endeavoured to extend its bounds. The great body of knowledge respecting his internal economy, accumulated from the experience of so many ages, now forms the subject of many separate branches of science, the details of which are conducted with great learning and ability by my distinguished Colleagues in this Institution. The structure and functions of the human body are therefore objects of attention in this place only as the standards of comparison, from which we trace the modifications of form throughout all the lower classes of the Animal Kingdom. We compare the organs of the inferior animals with the similar organs of man, to determine the extent of their deviation, and by watching the result of this change of structure, important light is thrown on the functions of the various parts. In animals far distant in the zoological scale, where similar organs no longer exist, we discover analogies of use between parts totally dissimilar in structure, which point out their uses in the economy, and mutually illustrate their functions. From the comparisons thus constantly instituted in all zootomical enquiries, this science has been denominated Comparative Anatomy.

Comparative Physiology treats of the functions of the lower animals. It considers the organs in a state of action, and determines the purposes they are destined to serve in the living economy. It makes us acquainted with the uses of all the parts of the inferior animals, and investigates the physical causes of all the vital phenomena they exhibit. It enquires into the means by which the various motions of animals are effected, whether of the whole body from place to place, or of voluntary or involuntary parts.

It examines into the circumstances which modify their sensations and perceptions, and discovers the sources of their peculiar instincts and habits. It describes the various modes in which the functions of Digestion, Circulation, Respiration, and Secretion, are performed in the lower classes of animals, and the duty assigned to each part of their structure in the performance of these functions. It points out the connexion which exists between the forms and mechanism of the various parts and the particular circumstances of each species, and the influence of their internal organization over all the phenomena they exhibit. It unfolds to our contemplation the inexhaustible resources of Nature in the means employed for the propagation of the species, from the simple fissiparous generation of Animalcules, or the almost equally simple gemmiparous mode of Zoophytes, to the highly complicated viviparous birth of Quadrupeds. In thus investigating the various functions of the animal economy, in all their different stages of simplicity and complication, it determines the true nature of animal life, and the conditions essential to its existence, and discovers the characteristic properties which distinguish animals from the beings belonging to the Vegetable and Mineral Kingdoms. And by the successful applications of the principles of chemical and mechanical science to the explanation of their complicated functions, it shows that, notwithstanding the disturbing forces of the animal economy, which have hitherto defied all attempts at generalization, the true solution of all vital phenomena and the laws of organized beings are to be looked for in those magnificent arrangements which embrace the whole system of the visible universe.

The term *Zoology* (derived from the Greek words *ζωον* *an animal*, and *λογος* *a discourse*,) has long been applied to that branch of Natural History which treats of animals. It chiefly considers animals in their entire and living state, and describes their external forms and distinguishing characters, the history of their life, and the principles of their scientific arrangement. It points out

the various external appearances presented by animals and the changes they undergo at particular seasons of the year, or at different periods of life. It examines the kind of food on which they naturally subsist, and the abodes which they frequent, whether in the interior or on the surface of the earth, or in the atmosphere, or in the waters which encompass the globe. It makes us acquainted with the remarkable instincts and habits which characterise the different species, the climates they inhabit, the extent of their geographical distribution, and the varieties of form and character which they exhibit in different regions of the earth. It describes the periodical or occasional migrations of the different species; their comparative numbers and longevity; their periods of torpidity and hybernation; their seasons of moulting, pairing, and propagating; their periods of gestation; their cares for the preservation of the infant progeny; the means employed to distribute the species over the globe; and the purposes they appear destined to serve in the economy of Nature.

This science enquires into the origin and duration of entire species, and the causes which operate towards their increase or their gradual extinction; the laws which regulate their distribution, and the changes they undergo by the influence of climate, domestication, and other external circumstances. It acquaints us with the uses of animals and of animal substances, in Medicine, Agriculture, Domestic Economy, and various arts; and the means of rearing and domesticating useful species, so as to increase their numbers, improve their breed, or extend their advantages more widely to mankind; and it likewise points out the most approved methods of preserving and preparing animals, dead or alive, for museums, menageries, transportation, microscopical or zootomical observation, and other purposes of science, utility, or recreation.

It investigates the characters and relations of the extinct races of animals, the remains of which are found every where imbedded in the crust of the earth; and thus ena-

bles us to read, in their imperfect and mutilated remains, the history of the former inhabitants of this globe. It points out to us the order followed in the successive creation of animals, as discovered by their fossil remains, by their degree of organization, and by their relations to the strata of the earth, and unfolds the nature of those remarkable revolutions which have repeatedly taken place in the Animal Kingdom, in consequence of sudden or gradual changes in the condition of the surface of this globe.

The study of these various objects forms a vast and interesting department of knowledge, which is intimately connected with the most common wants and enjoyments of man, and forms a subject of contemplation peculiarly calculated to gratify, improve, and elevate the human mind ; to extend its acquaintance with the sources of happiness immediately around us ; to store it with useful and practical knowledge ; to enlarge our views of the wonderful harmony which everywhere pervades the economy of the universe ; to exalt our conceptions of the infinite wisdom, power, and goodness of the great Author of Nature, as displayed in his minutest works ; and thus to lay the most rational and lasting foundations of piety and virtue, and strengthen the best principles of morality and religion.

The Animal Kingdom, which forms the exclusive subject of our study in this place, is by far the greatest of the three kingdoms of natural bodies, in regard to the number of distinct species which it comprehends ; and these possess a more complicated and perfect mechanism, exhibit a more interesting series of phenomena, and have a closer relation to the necessities and enjoyments of man, than minerals or plants. Man himself, and all the beings that, like him, enjoy life, motion and feeling, are comprehended in this great division of natural bodies.

More than a thousand species of Quadrupeds have been described in Zoological works, five thousand species of Birds, and as many species of Fishes, are now known to naturalists. The number and variety of Reptiles is im-

mense ; but as the greater part live in the most concealed situations in tropical deserts, in marshes, heaths, and rivers, and as many of them are armed with the most deadly poison ; this class of animals has been a less favourite object of study, fewer of them are known, and they still present to the enterprising naturalist a rich field of interesting and important investigation. The species of Shellfish or Testacea, Crustaceous Animals, Worms, Radiated Animals, and Zoophytes, which almost cover the bottom of the vast abyss, exceed all calculation. The forms of Animalcules vary in almost every infusion of vegetable or animal matter, which nature presents, or art can form. Nine hundred species of intestinal Worms have already been extracted from the bodies of animals, although comparatively little of the attention of naturalists has hitherto been directed to this extraordinary tribe of beings. The beautiful forms and colours of Insects, their interesting habits and economy, their extraordinary abundance and the facility of obtaining them, their singular metamorphoses, their importance to mankind and in the economy of nature, have long rendered this class a more popular and attractive object of study, and a hundred thousand species of these animals are now known to naturalists, a number which exceeds that of the Vegetable and Mineral Kingdoms taken together.

The number of individuals belonging to the Animal Kingdom, is not less remarkable than the varieties of their form ; notwithstanding the many obstacles to their increase, from the constant warfare between the different species, from disease, accident, the changes of season, and the destructive ravages of man. The weakness of herbivorous Quadrupeds, induces them to congregate for protection in large flocks, which cover extensive tracts of country, both in the Old and New World : as the deer, the sheep, the ox, the rabbit, the hare, the paca, and many others. The numbers are still greater in the class of Birds, where the vast flocks sometimes darken the heavens like an eclipse :

as in the wild pigeons of America, crows, gulls, &c. The number of Fishes which people the vast expanse of the ocean may be judged of from the immense shoals of individual species we frequently observe assembled together; as of the cod, the herring, and many other species: or from the number of ova they produce at every period of spawning; upwards of 200,000 ova, for example, have been counted in the spawn of a single carp, and more than 1,000,000 in that of the flounder. We frequently find our coasts covered, for miles of extent, with a continuous and dense layer of conchiferous or cirrhipedous animals, in a living state, as with the mussel, the oyster, the barnacle; and their *debris* accumulated, and thrown up by tides and currents of the sea, form hills of shells, or are collected into extensive beds, of some hundred feet in depth. The distinguished Italian naturalist and traveller Donati found the bottom of the Adriatic to be composed of a compact bed of shells, crustaceous animals, and corals, not less than six hundred feet in thickness. These animals are infinitely more abundant on the tropical shores of the New World, and the vast deposits of them found in the interior of the earth, show how extensively they peopled the ancient seas. Myriads of Mollusca and Conchifera live even beneath the sands of the sea, as the *Cardium*, the *Mactra*, the *Solen*, the *Mya*, and the *Natica*; and the interior of the rocky strata are peopled with living tribes of lithophagous animals; as the *Pholas*, the *Teredo*, the *Petricola*, and the *Saxicava*. The moving hills of ants, the countries laid waste by locusts, and the clouds of insects often observed, afford some idea of the immense number of individuals which compose the species of this class. Many Radiated Animals, as *Medusæ*, *Actiniæ*, and *Asteriæ*, are so numerous, that their carcasses, accumulated on the shores of the sea, are employed to manure the adjacent countries; their abundance often changes the colour of vast tracts of the ocean, or covers it with a sheet of fire. The waters of the Arctic Seas and

the floating cliffs of ice which tower above their surface are often tinged of various hues by different kinds of *Medusaria*, so minute that more than a hundred thousand are contained in a cubic foot of water. The bottom of the vast abyss is nearly paved with *Zoophytes*, which, in the Southern Hemisphere, rise up from great depths to form extensive reefs and islands. Every drop of the ocean, from the one Pole to the other, teems with animalcules, and Nature has amply provided for all their wants and enjoyments.

The various classes of animals spread over the globe, whether inhabitants of the dry land, or of lakes and rivers, or of the atmosphere, or dispersed through the boundless deep, find, in the rich and varied clothing of organic matter covering the nakedness of the earth, sufficient nourishment, not only for their own subsistence and growth, and for the continuance and increase of their species, but likewise sufficient to enable each individual to support various tribes of parasitic inhabitants. Innumerable species of *Insects*, *Arachnida*, and *Annelides*, move to and fro, on the surface of their bodies, feeding on the excreted matters of the skin, or sucking the vital fluids from the interior. Various kinds of *ova* are deposited, matured, and hatched under the skin, although the animals they contain are not destined to a parasitic life. Numerous species of *Worms* live and propagate, imbedded in the muscular and cellular tissues, in the internal cavities and vessels, and in the parenchymatous substance, even of the best protected organs of the body; as in the substance of the liver, the spleen, the kidneys, and the brain itself. And various fluids and secretions of the living system contain myriads of *Infusoria*, whose singular forms, phenomena, and modes of generation have been attentively examined and recorded by naturalists.

Every region of the globe presents distinct species of animals: the animals of America differ from those of Europe; those of Europe, differ from the species of Africa and Asia; and the species of New Holland, differ from

those of all the other continents of the earth. Every part of the ocean, every lake and river, and every species of plant on the earth, has its particular animated inhabitants. The trees of the forest may be distinguished by the insects that inhabit them, as animals are known by their parasitic worms and *epizoariæ*. From the Mole, the Beaver, the Rabbit, the Paca, that burrow in the earth, or the worms and insects that people its dunnest caverns, to the Chamois, the Deer, the Buctin, that bound along the snow-clad summits of the mountains—from the Zoophytes and Radiated Animals that line the deepest submarine caves, or the lithophagous tribes that dig their habitation in the rocks at the bottom of the sea, to the Eagles that soar above the clouds—from the Walrus, the Seal, the Bear, that people the dreary regions of the frigid Zone, or the gigantic Cetacea that gambol beneath the ices of the Poles, to the ferocious Feline tribes that range the sandy deserts of the burning Zone—the Animal Kingdom is distributed over every portion of this planet. Every element, and every situation where life could exist, is crowded with animated beings, which, like ourselves, have their feelings, their wants, and their enjoyments.

In this vast host of living beings, which all start into existence, vanish, and are renewed, in swift succession, like the shadows of the clouds in a summer's day, each species has its peculiar form, structure, properties, and habits, adapted to its situation, which serve to distinguish it from every other species; and each individual has its destined purpose in the economy of nature. Individuals appear and disappear in rapid succession upon the earth, and entire species of animals have their limited duration, which is but a moment, compared with the antiquity of the globe. Numberless species, and even entire *genera* and tribes of animals, the links which once connected the existing races, have long since begun and finished their career, and their former existence can now only be recognized by their skeletons, embalmed in the soft superficial

strata of the earth, or by their casts preserved in the more solid rocks. Of the single genus of shells, called *Ammonites*, for example, upwards of three hundred fossil species have been described; and, of these, a hundred species belong to our own strata; yet, not a single individual, in a living state, is now found to inhabit the waters of the globe. Almost every stratum, composing the crust of the globe, from the newest alluvial deposits to the oldest transition rocks, abounds with the fossil relics of different classes of the Animal Kingdom, from whose remains, often mutilated, imperfect, or extraordinary in their forms, the Zoologist must learn to decypher the history of the species, and discover their relations to the existing races. A new and boundless field of inquiry is thus laid open to his investigation, in the study of the characters and relations of Fossil Animals—a study highly interesting to the Physiologist, as pointing out the successive creation of animal forms, and the changes which organization has experienced since the first appearance of animals upon this earth, and essential to the Geologist, as determining the comparative antiquity and the identity of strata, and unfolding the nature of those terrible events that have repeatedly broken up the surface of this planet, raising the inhabitants of the sea to the summits of lofty mountains, and sinking extensive forests with all their animated inhabitants beneath the bed of the ocean.

The study of the animal kingdom forms an important branch of Natural History, or that science which treats of the properties and relations of all the natural bodies which can be considered as proper objects of human investigation; and it is intimately connected, not only with all the other branches of that extensive department of knowledge, but likewise with various branches of Medicine, Chemistry, Agriculture, and other sciences and arts.

The material substances every where surrounding us, and which form the objects of Natural History, are continually acting, directly or indirectly, on our bodily frame,

and, through its medium, on our consciousness. To their incessant operation, indeed, we owe the continuance of our existence, and all the enjoyments and pains with which it is replete. The external form of the different parts of our body, and all our organs of sense, relate to the properties of the objects around us. The structure of our internal organs, and every faculty and instinct we possess, have an intimate relation to the objects of the external world. The elaborate mechanism of the eye would have been useless without light, the ear without the vibrations of the air, and the delicate structure of the organ of smell without the odorous emanations of external bodies. We have continually recourse to external objects to supply the necessities of the body, to repair its losses, and to remedy the injuries it sustains. We ascribe to impressions received from them all the sensations, ideas, or states of the consciousness, which form the first elements of our knowledge, and the materials of all our most complex mental operations. They administer to all the wants of the body, to the pleasures of sense, and to the most refined intellectual enjoyments; so that, in our present state of being, the objects of the material world are intimately connected even with our intellectual existence, with all our instincts and passions, and with every internal feeling of pleasure or of pain.

These objects, however, are very differently related to us by their natural properties; some are indifferent to us with regard to pleasure or pain, or to the wants of our body; others are productive of agreeable sensations, or are essential to our existence; and others, by their noxious qualities, are injurious or destructive to our nature, and require to be carefully distinguished and avoided. The study, therefore, of the distinguishing properties, and the various relations of natural bodies, forms a most suitable and important occupation of the human mind.

By means of our senses we are admitted to an acquaintance with the external world, and are enabled to distinguish, by their sensible qualities, the objects which we

ought to pursue, from those which are unsuitable to our nature. The descriptions of Natural History, both with relation to the organic and inorganic kingdoms, relate to the sensible qualities of bodies; and there is this great satisfaction attending all their details, that they are founded on observation and experience, and their evidence rests on the established laws of thought. The description of a natural body, whether animal, vegetable, or mineral, consists in an enumeration of its various properties, either ascertained by simple observation, or discovered by the aid of experiment, which is only a more refined mode of observation. By the ordinary laws of association, our perceptions are grouped together, to form that assemblage of properties we ascribe to external bodies. And although we have no means of ever discovering any connexion or relation between the immediate objects of our consciousness and the beings to which we refer them, we use the descriptive terms *red*, *green*, *warm*, *cold*, *sweet*, *bitter*, and many others, without the least ambiguity or impropriety, to express the qualities of bodies. It is obvious, however, that they express only sensations, which, without mind, could have no existence in the universe. The existence or non-existence of a substratum connecting the supposed qualities of bodies, cannot therefore affect the propriety of the language employed in Natural History, or the accuracy of its descriptions, which, provided they correspond with all the ideas produced by the objects described, will be equally true, whether the objects be in their essence spiritual or material.

The definite descriptions which Natural History requires, are applicable only to a small portion of the visible universe. The vast distances of the celestial bodies preclude all scientific examination of the materials of which they are composed, and the Naturalist merely determines the influence they exert on animate and inanimate beings. Their relations to each other, and the grand and interesting phenomena they exhibit, their magnitudes and dis-

tances, and the laws which regulate their stupendous movements, belong to the sublime science of Astronomy. The atmosphere surrounding this earth, the waters which cover so large a portion of its surface, the solid materials of which the globe is composed, and the innumerable organic productions which clothe its surface, are the objects which the natural historian examines and describes.

A knowledge of the composition, properties, and phenomena of the Atmosphere, throws much light on the history and functions of animals, as this fluid is the great medium through which oxygen, heat, light, electricity, and all imponderable agents, the great springs of vital phenomena, are conveyed to organized beings. It unfolds to us the theory of respiration in all terrestrial and aquatic Animals, and shows the cause of the variety of temperature in the warm and cold-blooded classes. It explains to us the migrations of Animals, the theory of their geographical distribution, and many of their instincts and habits. It illustrates the periodical changes in the plumage of Birds and the furs of Quadrupeds, and the distribution of colours over the animal world. The Atmosphere is the medium by which *sounds* and *odours* are transmitted to sensitive beings, and it is intimately connected with *irritability*, the most general and the most inexplicable property of animal matter. This fluid is indeed the most essential of all the elements to the continuance of animal life, and is abundantly supplied to every individual from the summits of the highest mountains to the greatest depths of the sea.

The Waters of the earth cover three-fourths of its surface, and support a thousand times more animated beings than people the atmosphere or the dry land. The ocean covers vast plains, deep valleys and caverns, stupendous mountains and precipices, rapid gulfs and whirlpools, a rich and dense vegetation, a world of animals, and all the other natural scenery presented by the exposed continents. It is the great oxydizing principle of the metallic nucleus

of the globe, the pabulum of volcanic fires, the source of earthquakes, and the most powerful agent in the changes continually going on in the interior and on the surface of the earth. It gives off the materials of clouds, rain, snow, and hail, which give origin to springs, rivers, lakes, glaciers, icebergs, and many grand and interesting appearances of nature. Water is the nourishment of the Vegetable Kingdom, and is necessary to the support of most animals. A knowledge of that branch of Natural History which treats of the waters of the globe, is important to the Zoologist, as explaining the physical and geographical distribution, and the habits of aquatic animals. It accounts for the showers of animals that frequently fall from the atmosphere, as of fishes, frogs, shells, worms, &c. The ova of Zoophytes are not, like those of fishes, fixed by the parent in a situation favourable for their development, but are committed, like the seeds of marine plants, to the mercy of the waves, so that their distribution is regulated chiefly by the currents and motions of the sea, which Hydrography points out. The immense body of heated waters borne by the gulf stream through the Atlantic from the Equator towards the Arctic seas, conveys with it into high latitudes the temperature of tropical seas—a circumstance which enables us to account for the occurrence of animals along its course in latitudes far beyond their natural climate.

The study of the Animal Kingdom is inseparably connected with the science of Geology. No useful information respecting fossil animals can be learned or communicated without some acquaintance with the strata in which they occur, and with the general structure of the crust of the earth. And the successful study of extraneous fossils requires a very extensive acquaintance with the structure and character of the existing races, the nature and history of extinct animals being determined chiefly by a comparison with allied existing species. It is by finding accumulations of organic remains, spread over successive strata deep

in the earth, and which must have once lived upon its surface, that the Geologist has discovered that the crust of this globe must have undergone very great changes in the course of ages, and that it must have exhibited many a rich and varied surface, crowded with animated inhabitants, long anterior to the existence of the busy scene we now contemplate and enjoy. Anterior to the formation of the transition rocks, there appear to have been no animals upon this earth; and during the formation of all the transition and secondary strata, the animals that existed were almost all marine, which shows that these strata were mostly of marine origin, and that animal life originated and was developed in the bosom of the deep. Besides pointing out the order of succession in the formation of the strata, and their mode of formation by quiet deposition from a fluid, which alone could have preserved the delicate structure of the enclosed relics, these remains of animals show what must have been the nature of the situation where we now find them, at the period of their deposition; whether it formed the bottom of a fresh-water lake, or the submerged surface of a peopled continent, or the bed of a primeval sea; and many strata of the earth are characterized by the particular species of fossil animals they contain. By thus pointing out the extensive and terrible catastrophes to which the Animal Kingdom has often been subjected, we are enabled to perceive a cause of the many apparent interruptions in the chain of existing species.

As the knowledge of Mountain Rocks is founded on an accurate acquaintance with the characters and properties of simple Minerals, the study of Mineralogy is intimately connected with that of Organic Remains, and a previous acquaintance with the practical details of this branch of Natural History will greatly facilitate the most intricate and obscure paths of the Zoologist. He is often unable to obtain any information as to the locality or the geological situation of the fossil animals presented to his inspection, and must judge from the nature of the enveloping mass or

of the petrifying substances, both concerning the mineral strata in which they were imbedded, and the nature of the countries in which they were found. The flinty *Echini* most generally indicate the chalk formation—a formation which we observe to form low and flat districts on the east coast of England. *Encrinites* mineralized with calcareous spar, we most frequently find in the limestones of the coal formation, which form low and fertile countries, varied only by gentle elevations of the strata, or interrupted by abrupt projections of trap rocks, as in many of the secondary lime-stone districts of Scotland. The external aspect of the skeletons of *Fishes*, from the Paris gypsum formation, is very different from that of the fresh-water fishes of the bituminous marl-slate, independent of their zoological characters.

The branches of Natural History we have hitherto mentioned, as connected with or illustrative of Zoology, relate only to bodies of a simple composition, and whose phenomena, depending on the ordinary affinities of matter, exerted at insensible or at perceptible distances, admit of rigorous explanation on chemical principles, or are regulated by the laws of mechanical philosophy. The composition of organized bodies is more complex: they assume more regular and determinate forms, the affinities of their component elements are more nicely balanced, and they exhibit a series of phenomena, for a definite period, too complicated to be explained in the present state of science, either on the principles of Chemistry or Mechanics. From numerous experiments, Naturalists have been led to believe that the simplest organized bodies, as *Monads* and *Globulinæ*, originate spontaneously from matter in a fluid state, and that these simple bodies, of spontaneous origin, are the same with the gelatinous globules which compose the soft parts of Animals and Plants. Many of the phenomena of Plants, as the absorption of moisture by their roots, the respiration of the leaves, their turning in the direction of the sun, and the passage of fluids through their inert tubes, are

dependant on the common laws of inorganic matter; the pulpy matter of ripe fruits has its particles arranged in strict conformity with the laws of crystallization, and often possesses a power of double refraction, as in the gooseberry and the orange; and in the Animal Kingdom the same laws operate in the formation of the silicious crystals, which compose the skeleton of many Zoophytes, as the *Cliona*, *Halina*, *Leucalia* and *Tethya*, and the calcareous crystals of many Radiated Animals, as the *Asterias* and *Echinus*. This, however, does not affect the great characters which distinguish organized from inorganic bodies, and the Vegetable from the Animal Kingdom.

Organic bodies have an arrangement of internal parts adapted for the transmission of fluids through every part of their structure, which enables them to grow by a process of internal developement. They subsist on fluids, which in vegetables are sucked up by external filaments or roots from the soil in which they are fixed, or by their whole external surface as in Hydrophytes; and in animals the fluid aliment is absorbed from an internal reservoir or stomach, by ramified vessels, like internal roots, or it transudes through the surface of their body, as in those animalcules which have no internal cavity. The chemical composition and the whole organization of vegetable bodies are more simple than those of animals, and their phenomena are more obviously dependant on physical laws. Their analogies, therefore, with the complicated mechanism and functions of the human body are very remote, and the science of Botany, which forms an important branch of the healing art, owes its high importance and attractions to circumstances totally different from those close analogies, which connect the study of animals, with the practice and pursuits of medical science.

The elegant forms and delicate structure of Plants, the beauty and harmony of their colours, and the fragrant odours they exhale, the refreshing verdure, the variety, and the richness which they spread over the face of nature, the

delicious fruits they yield, and the raiment and shelter they afford, the interesting series of changes they undergo at different seasons of the year, the support they yield to the animal world, their various medicinal virtues, and their numerous useful applications in domestic economy and the arts, have long rendered this branch of Natural History a popular and favourite object of study. Plants afford hemp, cotton, flax, and many other articles employed in forming clothing. Wood, of all natural substances, is the most extensively employed in the arts; it forms the framework of cities; and fleets, which are bulwarks of empires, and convey population and the productions of commerce over the globe, are built of it. Opium, Camphor, Squills, Belladonna, Chincona, Jalap, Fox-glove, Ipecacuan, Rhubarb, and many other of the most active remedies employed in medicine, are derived from Plants; they yield also many of the most common articles of food, and the most favourite dainties of the table. Spirits, wines, and the various products of fermentation, are derived from vegetable substances. There are few plants which do not afford sustenance to some kind of animals; and as they grow by absorbing inorganic matter, they are a kind of laboratory, in which matter is organized to suit it for the digestive organs of animals. Many plants which are poisonous to one kind of animals, are the proper food of another kind. Numerous species of insects reside and subsist only on particular species of the Vegetable Kingdom, and most of the feathered inhabitants of the air select the seeds and fruits of particular Plants. The forests of marine plants at the bottom of the sea, are covered with animated inhabitants, which depend on them for subsistence, or cling to them as points of support. The Animal and Vegetable Kingdoms are so intimately blended at their origins, that Naturalists are at present divided in opinion as to the kingdom to which many well-known substances belong—as the *Codium tomentosum*, *Alcyonium bursa*, the *Corallina officinalis*, *rubra*, and

opuntia, *Dichotomaria*, *Tremella*, *Globulina*, &c. Several organized bodies, as *Oscillatoria*, *Conferva*, and *Monades*, which have neither roots, nor capillary vessels, nor a digestive stomach, nor other distinct organs of plants or animals, connect the Vegetable and Animal Kingdoms by imperceptible gradations. Many Plants, as the *Cistus helianthemum*, *Hedysarum gyrans*, *Mimosa pudica*, and *Berberis vulgaris*, exhibit motions similar to those which we ascribe to irritability in animals. The study of the almost mechanical functions of plants, enables us better to comprehend the mechanism of the complicated functions of animals. An acquaintance with the species and history of Plants is indispensable to the Entomologist, and is necessary to the successful study of Ornithology. It explains to us many of the most remarkable habits of insects, and the reasons of the periodical flight of migratory birds over vast tracts of the ocean. When we consider, indeed, the importance of a knowledge of Plants in the domestication of useful animals, in the rearing of foreign and domestic species, and in illustrating the history and economy of most animals, we find that an acquaintance with the Vegetable Kingdom is calculated to facilitate the path of the Zoologist in every department of his investigations.

In the infancy of Botany it was pursued only by medical men, and with a view to the medicinal virtues of plants. The numerous useful applications and the extended relations of the science, however, in modern times, have raised this interesting study to a high rank in the scale of human knowledge; and by the zeal and industry of its cultivators in all parts of the earth, nearly seventy thousand species of Plants have been discovered and characterised. The study of the Vegetable Kingdom is an inexhaustible source of innocent and rational recreation, has given rise to many of the most brilliant and useful productions of human genius, and has long been an independent branch of academical instruction in most of the Universities of Europe.

Although the study of the Animal Kingdom has not

hitherto met with the same fostering care in the established Universities of Britain; it embraces the consideration of a series of beings, whose relations to the wants and comforts of man, are not less numerous and important than those of Plants, and it has long been cultivated with advantage and success in the Universities of France, Italy, and Germany. Whether, indeed, we consider Animals as affording to man materials for the maintenance and growth of the body, or medicines to prevent, alleviate, or remove its diseases, or clothing to protect his frame against the vicissitudes of temperature, and the inclemencies of the seasons, or physical power to aid him in the operations of art, or protection against the attacks and depredations of foes, or ornaments to please and cultivate his taste, or luxuries to gratify the sense, or knowledge extensively applicable to his necessities and enjoyments, or an endless source of intellectual amusement and gratification, their study forms a department of knowledge which yields to no other in its immediate importance to the existence and happiness of man.

The form and disposition of the human teeth, the structure of the digestive organs, the natural instincts and appetites, and the results of constant and universal experience, show that man was designed to subsist partly on animal flesh; and almost every class of animals supplies him with abundant and wholesome food. The whole class of Quadrupeds, and almost every part of their body, the muscles, the brain and spinal cord, the lungs, the heart, the stomach and intestines, the liver and pancreas, the kidneys, the uterus, the placenta and udder, the skin, the fat, the marrow and gelatinous substance of the bones, the blood, and the milk, are used as alimentary substances. All the species of Birds, and their eggs, afford a wholesome nutriment to man, and even their nests are sometimes used as articles of food. The flesh and the eggs of many species of Reptiles, form also esteemed and highly nutritious articles of food. Several kinds of turtles, as the *Testudo ferox*, Lin. which

abounds in the rivers of South America; the *Testudo Græca*, an inhabitant of Africa and Sardinia; the *Testudo squamata* of Java; and the *Testudo Europea*, which is the species most abundantly distributed over the southern countries of Europe, are prized as dainties of the table. Some species of the lizard tribe are also used as food. Both the flesh and eggs of the *Iguana* are eaten. Some species of the viper are prepared as food, and several kinds of frogs are in common use on the Continent, as delicate articles for the table. Nearly the whole class of Fishes are employed as articles of food, and in many parts of the globe they form almost the entire support of extensive populations. On the coasts of Lapland, Siberia, and the western parts of Africa, many rude tribes make bread of dried or pounded fishes. Most of the marine and fresh-water Molluscs and Conchiferous Animals afford a wholesome and palatable food, and are very extensively used by those who inhabit the shores of the sea; the cuttle-fish, the oyster, the mussel, the clam, the cockle, the whelk, the limpet, and the snail, are among those in common use. The Romans were supplied with oysters from the British coasts. Numerous Crustacea, as all the larger species of crabs and lobsters, the prawn, the shrimp, &c., are extensively employed as articles of diet, and as a highly flavoured condiment to more substantial aliment. Even the classes of Insects, Tunicata, and Radiata, supply articles of nutriment to man; the locust is extensively used as an article of food, the honey of the bee, some species of *ascidæ* and *actinæ*, and the ovaria of the *Echinus esculentus* are also employed.

Many Animals which feed on substances obnoxious to us, afford, notwithstanding, a wholesome nourishment. Numerous insectivorous Quadrupeds subsist entirely on the most loathsome and indigestible insects and worms. Birds, which feed on the most poisonous reptiles and insects, yet afford a wholesome flesh; and crabs, which feed on the most putrid carcasses of fishes, yet yield a highly palatable

nutriment. There is so close a chain of connection and dependence between all the different classes of the Animal Kingdom, that even the lowest may be said to contribute, though indirectly, to the sustenance of man. Animalcules are the food of Zoophytes, which, in their turn, are consumed by Radiated Animals and worms; these are devoured by Crustaceous and Molluscous animals, which serve as the food of Fishes; and Fishes, which are born to a constant warfare, feed on each other, or are pursued by the amphibious and cetaceous Mammalia which inhabit the deep, or are seized by the clouds of birds which watch their motions from above, or they are dragged from their secret recesses by the artifice of man. The different classes of Animals generally subsist on those beneath them in the scale of being, or they derive their support from the Vegetable Kingdom, so that matter is perpetually advancing to higher states of organization.

An acquaintance with the composition, and the degree of digestibility of alimentary substances derived from the various classes of the Animal Kingdom, would prove an important acquisition to medical science. It would greatly extend the powers of the practitioner, by enabling him to derive from animal substances, nutriment adapted to the various states of the digestive organs, in health, convalescence, debility, or disease. Thus, in the class of Quadrupeds, the muscular parts, which consist chiefly of fibrine, with a little gelatine and osmazome, are the most nutritious; the brain and the glandular parts, which are composed chiefly of coagulated albumen, are less nutritious; and the tendons, ligaments, and membranous parts, which consist principally of a condensed gelatine, afford the weakest nourishment.

The Animal Kingdom not only presents an inexhaustible supply, and an endless variety of wholesome food, adapted to every state of the constitution, to every taste and idiosyncrasy, to every age, sex, and climate, but likewise

affords many of the most useful and powerful remedies employed in the treatment of disease.

Castor, a powerful antispasmodic medicine, employed in hysteric affections, is a secretion of two glandular sacs, which terminate at the prepuce of the Beaver.

The well-known powerful aromatic substance, *Musk*, which is extensively used in epilepsy, hysteria, and other spasmodic diseases, is obtained from two glandular sacs placed before the prepuce of the *Moschus moschiferus*, an animal like a small goat, which inhabits the most dreary, rocky summits of the high mountains of India, China, Thibet, and other countries in the east of Asia.

Spermaceti, which is used internally in catarrh and gonorrhœa, and externally in ointments to wounds and excoriations of the skin, is procured from an unctuous matter, filling numerous cartilaginous cavities on the upper part of the head of the Cachalot, a cetaceous animal as large as a whale, which abounds in various parts of the South Sea. The highly esteemed odoriferous *Ambergris* is an induration of feculent matter found in the large intestine of this animal in a state of disease.

The crustaceous coverings of *Crabs*, which consists of the carbonate and phosphate of lime, and certain concretions of a similar composition, found in their stomach, have long been employed as medicines to remove acidity of the digestive organs. And various other calcareous substances derived from the Animal Kingdom, as the burnt shells of the common *oyster*, the egg-shells of the domestic fowl, and the *Corallina officinalis*, have been extensively employed in medicine as antacids. These earthly products of organization, when levigated and washed with water, afford a calcareous powder, more free from silicious particles, or other impurities, than any other form of the carbonate of lime. In the article sold by the apothecaries of France, under the name of the *Corallina officinalis*, Lamouroux detected more than a hundred distinct species

of calcareous Zoophytes, which shows how extensively this class of animals is capable of contributing to the articles of the *Materia Medica*.

Other Zoophytes, containing *Iodine*, have been employed with great success in the cure of bronchocele, and in the removal of chronic glandular tumors, particularly in Savoy, Switzerland, and other mountainous districts of the Continent, and are recommended in all the British pharmacopœias. Flustroe are used in Iceland for the removal of scorbutic affections.

The horns of the *Deer*, when filed down and boiled in water, afford a transparent, colourless, and inodorous jelly, which is advantageously employed internally, as a demulcent, in dysentery and diarrhœa, and as a light nutritive article of diet for convalescents. The burnt horns of this animal, from the quantity of phosphate of lime they contain, have been used with much success in rickets and *mollities ossium*.

The *Phosphate of Soda*, used in medicine as a cathartic, is procured by a complicated process from the burnt bones of Quadrupeds. And *Phosphoric Acid*, which enters extensively into chemical compounds, and from which that remarkably inflammable substance, Phosphorus, is obtained, is procured by a chemical process from animal substances. *Empyreumatic animal oil*, an antispasmodic, is obtained, by distillation, from the bones and horns of animals.

The basis of *Sal Ammoniac*, or *Muriate of Ammonia*, which is used internally as a diuretic and diaphoretic, and externally as a discutient to indolent tumors, is procured by distillation from the urine and bones of animals. From the quantity of *ammonia* disengaged during the combustion of animal substances, the ammoniacal odour is frequently adopted as a test of the animal nature of doubtful organized bodies.

Isinglass (which consists of the dried coats of the swimming bag of the sturgeon, and several other cartilaginous

fishes,) the *adipose substance* of the common hog, and the *wax* and *honey* of the bee, are extensively used for medical and pharmaceutic purposes. And *Prussic Acid*, the most powerful of all narcotic substances hitherto discovered, is obtained from animal matter in a state of putrification.

Scarcely any article employed in medicine or surgery is more extensively beneficial than the *Spanish Fly* (*Cantharis vesicatoria*), both from its external and internal action on the living body. These beautiful, shining, green-coloured insects, swarm in the forests on the southern shores of Europe, feeding on the leaves of the ash and the elder tree, and spread a strong and unpleasant odour around them. Although some insectivorous Quadrupeds, as the hedgehog, can eat large quantities of them with impunity, their corrosive action on the human system is so great, that they frequently inflame and excoriate the hands of those who are incautious in collecting them; and on this corrosive property their chief medicinal virtue depends. In cases of violent visceral inflammation, the external use of *Cantharides*, as rubifacients or vesicatories, cannot be supplied by any other medicine. They create a powerful determination to the surface, and cause a copious effusion of the serous part of the blood, by which the internal action is relieved. They have so remarkable a determination to the urinary organs, that strangury is sometimes occasioned by their external use; and when administered internally, they sometimes act so violently on the kidneys and bladder, as to induce inflammation of these organs, and a discharge of blood. From this tendency to excite the urinary organs, they are employed in various diseases connected with debility of the urinary and genital systems, and likewise as a diuretic in dropsy.

The *Leech* has been employed in blood-letting for more than two thousand years; its medical application is described by Themison, who wrote before Celsus and Galen, in the time of Augustus. Its use is likewise described by Pliny, and is celebrated in the lines of Horace. This

small simple vermiform *Annelide* has a dark colour and forbidding aspect, and inhabits the foul stagnant marshes and pools of fresh water throughout Europe. It perforates the skin of animals by its three sharp teeth, and by a constant sucking from the wound it fills its body with their blood. From the smallness and superficial nature of their wound, the mildness and safety of their operation, the facility of regulating the quantity of blood they extract, and the local nature of the depletion, they are in most inflammatory affections more convenient and efficacious than the lancet, much safer in their operation, and, in many cases, nothing could supply their place.

I shall not here make any allusion to the innumerable applications of animals and animal substances to the cure of disease, recorded in the writings of the ancients, founded for the most part on superstitious notions or on virtues altogether imaginary, and which the more scientific principles of modern medicine have entirely discarded from practice. They will be found recorded in the Natural History of Pliny, or scattered through the writings of Hippocrates, Galen, Dioscorides, Avicenna, and other Greek and Arabian physicians.

Man, though the most naked, helpless, and delicate of animals, is the most extensively distributed over the globe, and enjoys health and vigour in the torrid, temperate, and frigid Zones, from the 74th degree of North Latitude, to the 56th degree South of the Equator. Without fur, feathers, scales, shells, or other natural covering, he is enabled to endure the most opposite extremes of climate by the remarkably accommodating power of his constitution, and by his superior sagacity in devising artificial means to defend his frame against all the vicissitudes of the seasons, and the varieties of climate. He covers the nakedness of his body with spoils from almost every class of animals. The wool, the furs, and the skins of Quadrupeds are manufactured into garments, or are worn in their natural state. The plumage of Birds, the scaly coverings of Rep-

tiles, the skins of Crocodiles, and even of some Fishes, and the shells of the inferior tribes, are employed to cover his body, and in many countries canoes and houses are also covered with the skins of animals. In Polar regions, where the scanty vegetation can supply him neither with clothing nor food, the periodical migrations of Quadrupeds and birds, and the great abundance of the lowest tribes of animals, more than supply all his wants. The rein-deer, the Polar-bear, the musk-bull, the wolf, and several other Quadrupeds, were found by our enterprising countrymen in the sterile and frozen solitudes of Melville Island. The Naturalist who accompanied Kotzebue, describes the waters of the Polar seas as swarming with animal life. "Medusæ and Zoophytes, Mollusca and Crustacea, innumerable species of Fishes in incredibly crowded shoals, the gigantic swimming Mammalia, whales, physeters, dolphins, morses, and seals, fill the sea and its shores; and countless flights of water-fowl rock themselves on the bosom of the ocean, and in the twilight resemble floating islands."

The productions of nature are subjected to numerous changes to suit them for administering to our wants and enjoyments: hence have arisen the various arts which occupy so large a portion of the intellectual and physical powers of man. The employment of the physical powers of the lower animals in conducting the operations of art, enables mankind to devote a larger share of intellectual energy towards their improvement, and affords a power more certain in its operation, more susceptible of every modification, more extensively applicable, and more completely under control, than any mechanical forces ever contrived by man. The employment of animals in the operations of agriculture is almost coeval with the existence of the human race. Their use is no less ancient and important in the operations of war, in travelling, hunting, conveying over land the productions of industry and commerce, and in communicating or regulating the motion of

engines and machinery used in the arts, or in the common intercourse of society. The horse, the elephant, the camel, the dromedary, the ox, the ass, the mule, the rein-deer, the dog, the lama, and the buffalo, have long employed their physical strength in the service of mankind. Horses were as common in the armies of the Pharaohs, and of the Israelites, and at the Trojan war, as at the present day. Solomon had forty thousand stalls for the horses of his household, and employed dromedaries as beasts of burthen. Armed elephants were used in the Persian armies before the invasions of Alexander the Great, and were even marched into the centre of Italy. Dogs were employed by the Lydians to hunt the boars of Mount Olympus before the time of Herodotus. Regular posts were established in Persia by means of horses before the time of Xerxes. Camels were used in travelling in the days of Abraham, about 2000 years before Christ, and they were employed as beasts of burthen by the Persians in their wars against the Lydians. Cyrus gained a signal victory over the forces of Cræsus, by employing a troop of camels to frighten the horses of the Lydian Prince. Hannibal struck terror into the Roman army by a night stratagem, with oxen. Asses were employed by the Israelites as beasts of burthen four thousand years ago, as they are employed in the same countries, at the present time.

We employ the watchfulness of the dog, the cat, and some other domestic animals, to protect our property. We employ the strength of the elephant, and the fleetness of the horse, to defend our lives from danger. Bats, birds, and insectivorous Quadrupeds, check the ravages of insects, and protect the fruits of the field for our use. Birds and insects, by devouring the putrid carcasses of animals, check the infectious emanations, which otherwise would corrupt the air. Carnivorous Quadrupeds and rapacious Birds form a necessary restraint to the too rapid increase of the weaker tribes, which find a never-failing abundance of food in the vegetable covering of the earth.

We make use of innumerable productions of the Animal Kingdom, to ornament our person or property. The tusks of the Elephant, and of many other Quadrupeds, supply us with ivory; Reptiles yield us the tortoise-shell; Molluscous Animals the China ink; Conchiferous animals the rich pearls of commerce; and Zoophytes the beautiful red coral. No art can imitate the fleece of the Tiger, or the Leopard, or the Panther, or the Beaver, or the Ermine, nor the brilliant plumage of the Humming-birds, nor the snow-white down of the Eider, nor the splendid plumes of the Ostrich and the Birds of Paradise. The lustre of the polished Nautilus, the Haliotis, the Turbo, the Ostrea, and many other shells, surpasses that of the precious metals; and no production of human industry equals the rich product of the Silk-worm. Leather, hair, bristles, wool, parchment, bladder, catgut, feathers, quills, down, shagreen, horn, bone, whalebone, spermaceti, tallow, train-oil, wax, honey, lac, cochineal, ivory-black, glue, China-ink, mother-of-pearl, are among the useful substances derived from the Animal Kingdom. Ivory and tortoise-shell are extensively used in the arts for ornamental purposes; the red coral and the sponge form valuable articles of commerce in the East; houses and pavements are built of madrepores on the shores of the Red Sea and in the Ladrone Islands, and they are also burnt to manure the land.

We are indebted to the Animal Kingdom for the delightful and invigorating amusements of hunting, shooting, and fishing, the pleasures of falconry, and the sanguinary sports of the arena. Menageries have been the delight of princes since the collection formed by Alexander for his master Aristotle at Babylon. We feel an irresistible delight in watching the interesting habits, or in contemplating the beautiful forms and structure of the lower animals, and from the indications of mind and feeling which accompany all their diversified movements, they are much more calculated to awake our sympathy and engage our affections than the automatic phenomena of plants and minerals.

We admire the elegance and fleetness of the horse ; we view with terror the strength and fierceness of the lion and tiger ; we are astonished at the magnitude of the whale, the giraffe, and the elephant ; we make a companion of the dog from its attachment and fidelity ; we are amused with the grotesque vocal imitations of the parrot, and the intelligent airs of the monkey ; we admire the industry of the ant, the mechanical skill of the beaver, and the systematic economy of the bee ; we contemplate with pleasure the soaring flight of the eagle, the immense velocity of the falcon, and the strength of the ostrich ; we listen with delight to the warbling of birds, and are charmed with the melodious notes of the nightingale.

No department of science indeed is calculated to present the mind with more interesting objects of contemplation, or enrich it with more affecting imagery, than the study of animated nature. It has called forth the intellectual energies, and enriched the compositions of all the philosophers, historians, and poets of antiquity, and has been a fertile theme of the profoundest disquisitions in modern times. The writings of Moses, and Solomon, of Homer, Hesiod, and Oppian, of Herodotus, Plato, Xenophon, Aristotle, Diodorus, and Ælian, abound with interesting descriptions and metaphors taken from the Animal Kingdom ; and indeed they constitute the most striking and affecting objects of the works of genius in every language, in every country, and in every age. An accurate acquaintance with the forms, characters, and habits of animals, gives energy and life to the productions of the painter, the statuary, and the sculptor ; and as they constitute the chief natural riches of a country, they equally interest the navigator, the traveller, the geographer, the historian, and the legislator. They occupy a prominent part in the hieroglyphics of Egypt, the sculptures of Greece, the mosaics of ancient Rome, and in the great productions of Raphael, Michael Angelo, Canova, and other artists of modern times. They were the gods of the Egyptians, and are

preserved, embalmed with their kings, in the Pyramids of Memphis. The zoological traveller can never feel listlessness nor despair, whether he traverse the sandy deserts of the torrid Zone, the ices of the Poles, or the trackless expanse of the ocean, as, in the dreariest solitudes, every element is to him peopled with interesting objects, all proclaiming the presence and the watchful care of the Great Author of his being.

The natural philosopher, who contemplates the mechanism of animals under all their diversified forms, to discover the structure and connections of the various parts, their adaptation to the purposed ends, and the laws which regulate their complicated movements, is lost in admiration of the endless resources of Nature for the accomplishment of the same design, the regularity and simplicity of the laws which regulate the motions of living matter, and the exquisite mechanism of the parts in all their minutest details. Even in the most complicated animals he finds the solid frame-work, the skeleton and its joints, constructed according to the strictest laws of mechanics, and the muscles act in exact accordance with the principles of the lever; the functions of respiration, digestion, and nutrition, are simple chemical processes, and the various secretions of the living body are complicated products of chemical action; the nerves are a kind of galvanic wires, which establish an instantaneous communication between the most distant parts, and the whole circulating system, with its tubes, valves, fluids, and moving powers, is a complicated hydraulic machine; the larynx, the organ of voice, is an exquisite wind instrument, and the ear is admirably constructed according to the principles of acoustics; the eye is the most perfect of optical instruments, and indeed every part of the animal frame is constructed according to the strictest rules of proportion, fitness, and beauty.

The study of the systematic arrangements of Zoology, or the principles according to which the innumerable species of animals spread over the globe are distributed

into groups, as genera, orders, and classes, to point out more readily their mutual relations, and aid the memory in acquiring knowledge concerning them, is a kind of practical logic eminently calculated to exercise and improve our faculties of observation, perception, memory, and reason. Comparative Anatomy is a study of analysis, which discovers to us the chain of connection between all the apparently isolated facts of Zoology ; it continually unfolds to our view new scenes of wisdom and design in every part of the animal creation ; it accustoms us to patient and connected inquiry ; it begets a habit of minute observation and accurate discrimination ; and it alone has conferred the rank of science on the study of animated nature. It has engaged the attention of the most distinguished philosophers from the time of Democritus to the present period ; it has contributed largely to the advancement of all the branches of the healing art, and to the progress of Geology, Zoology, and the philosophy of mind ; and it has afforded many of the most useful and brilliant discoveries recorded in the history of science, as of the Lacteal Vessels, the Absorbent System, the Thoracic Duct, the Circulation of the Blood, and the great principle of Galvanism.

The course of instruction to be delivered on these two extensive branches of science will embrace an account of the structure, functions, history, and classification of existing animals, and a description of the fossil species. The lectures and demonstrations will be illustrated by an extensive series of zoological specimens, drawings, and zootomical preparations, the greater part of which are already collected and arranged. The classes, orders, and genera of every division of the Animal Kingdom will be examined, and the most useful and interesting species of each group will be selected for illustration.

After a few preliminary Lectures, detailing the objects and relations of the study of Animals, and explaining the technical language of the science, the Comparative Ana-

tomy will occupy the first half of the course, and will comprehend the demonstration and description of the organs of motion, sensation, digestion, circulation, respiration, secretion, and generation, in all the various tribes of the lower animals. The physiological details, and the applications of the facts to Zoology, Medicine, and other sciences, will accompany the demonstrations of structure; and this part of the course will conclude with observations on the mode of conducting zootomical inquiries, and on the art of making and preserving zootomical preparations.

The Zoology will succeed the anatomical details, as all scientific arrangements of animals are founded on structure, and will be divided into two distinct departments; the first treating of existing animals, and the second of extinct species.

The history of the existing species of the Animal Kingdom will comprehend the characters, classification, habits, and uses of the animals belonging to the classes, *Mammalia*, *Aves*, *Reptilia*, *Pisces*, *Mollusca*, *Conchifera*, *Tunicata*, *Cirrhipeda*, *Annelides*, *Crustacea*, *Arachnida*, *Insecta*, *Vermes*, *Radiata*, *Zoophyta*, and *Infusoria*, commencing with the natural history of the human species. This division of the course will be terminated with practical observations on the methods of collecting, preparing, transporting, and preserving zoological specimens.

The history of the known species of Fossil Animals will be detailed in the same descending order of the classes, and will contain an account of their distinguishing characters, their physical condition, their geological situation, their geographical distribution, and their relations to the existing species. In this part of the course, the connections of the study of Fossil Animals, with the doctrines of Physiology, will be pointed out, and also their relations to the past revolutions of the globe.

THE END.

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AN

INTRODUCTORY LECTURE

DELIVERED IN

THE UNIVERSITY OF LONDON,

On FRIDAY, OCTOBER 24, 1828.

BY THE REV. THOMAS DALE, M.A.

(Of Corpus Christi College, Cambridge.)

PROFESSOR OF THE ENGLISH LANGUAGE AND ENGLISH LITERATURE.

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ADVERTISEMENT.

THE following Lecture, introductory to a Course upon the Principles and Practice of English Composition was originally written without any view to publication, and is now printed only at the request of several Members of the Council, and most of the Professors who were present at the delivery. Could the Author ascribe the favourable acceptance of his production to its literary merit, that love of praise would indeed be gratified, which is inherent in most men, and to which he does not affect to be insensible. But he derives a far more heart-felt and enduring satisfaction from the conviction (which he is desirous here publicly to avow and permanently to record,) that he owes this distinction SOLELY to the expression of sentiments, in which all his colleagues, with whom he has the advantage of being acquainted, heartily concur—that mental culture should be connected with moral instruction, and both enlisted in the service of Religion.

INTRODUCTORY LECTURE.

GENTLEMEN,

THE man who can make his first public appearance in a new and untried character, without some feeling of diffidence and trepidation, must be endowed with peculiar firmness of resolution, or possessed of more than ordinary reliance on his own powers; must deserve admiration for his fortitude, or merit censure for his presumption. That censure I should almost be contented to incur, could I exchange for it the painful apprehensions which oppress me at this moment, and which are in no degree alleviated by the reflection, that I have repeatedly appeared before the public in another character, and addressed more numerous audiences on other topics. I feel there is but little resemblance between the respective situations. Then I could forget all personal considerations in the transcendant importance of the subject, and, from the consciousness of up-right intention, and in the strength of fearless sincerity, could disregard the opinion of others, except as it reflected on themselves;—I cannot do so *here*. I speak before a tribunal which is competent to form a judgment, and to whose judgment I must submit;—and on a subject where I can only entreat indulgence, instead of appealing to conviction. Gentlemen, under these novel, and, to me, most trying circumstances, there is but one course which I can safely pursue. I will first tell you, with plainness and candour, what I conceive to be the duties of the office which I sustain in this University; and then explain to you, cir-

cumstantially and clearly, the manner in which I purpose to fulfil them.

I have always considered, Gentlemen, that the fundamental principle of an instructor, whether acting in a private or in a public capacity, should consist in adapting his instructions, as exactly as possible, to the previous attainments of those individuals who may place themselves under his tuition. But in discharging the duties which are attached to my office as Professor of the ENGLISH LANGUAGE, the application of this principle will be attended with no common difficulty. In ordinary cases, an instructor possesses the advantage of arranging his pupils into classes, according to their several capacities or acquirements; but in the present instance, where a number of persons differing in age, and still more in the degree of acquaintance with the subject about to be taught, must be combined into one class, it is utterly impossible to ascertain, and not easy even to conjecture, the general average of information. The teacher, consequently, will labour under a two-fold disadvantage: he must either introduce what is superfluous to some, or omit what is essential to others; he must incur the hazard of wearying the former by repetition, or leaving the latter in ignorance. Yet how can he doubt for an instant, which of these alternatives the interest of his pupils, and consequently his own incumbent duty, requires him to adopt? Surely it is far better that some should be unnecessarily reminded, than that any should continue wholly uninformed;—a recurrence to familiar topics may occasionally be attended with advantage, while the total omission of subjects, the knowledge of which is an indispensable preparative for future advancement, cannot fail to be productive of injury. There is an obvious analogy between the acquisition of any art or science, and the erection of a building. If the edifice is designed to be solid and durable, no disadvantage, beyond a trivial delay, can arise from excavating more deeply or more extensively than the foundation absolutely demands; while any deficiency at the base-

ment might prove fatal to the stability of the structure. Thus, whatever kind of knowledge we are studious to attain, it can be of little consequence that our progress should be slightly retarded by devoting too much attention to first principles; but if, before we are adequately grounded in the rudiments of an art or science, we ascend precipitately to its higher and more difficult parts, then is the foundation of our knowledge defective, and the fabric which we have reared upon it will be proportionably insecure.

These observations are premised, that if the course which I intend to pursue in the succeeding Lectures should be esteemed by some persons too plain and elementary for students of an University, those who are directly or indirectly interested may at least be fairly apprized, in the first instance, what kind of instruction will be imparted. In the formation of my plan, I have been guided solely by a view to the general benefit; it is the offspring of much serious and patient deliberation—and I have at least brought to my task one qualification for judging of its probable efficiency. I am not destitute of experience in the ordinary acquirements of those young men who may be expected to constitute the larger proportion of my future audience, and whose benefit therefore I have especially consulted;—those, I mean, who having completed their scholastic education, are now, as it were, preparing their weapons and polishing their armour, that they may enter fully equipped into the arena of public or professional life. I am aware that young men of this description, however conversant with studies that are strictly classical, are sometimes comparatively unpractised in English composition, and often wholly unacquainted with the principles of the English language, whenever it differs—as it does in many and important particulars—from the Latin and the Greek. Nor can I have any hesitation in stating explicitly, to what cause this deficiency may be ascribed. ‘Youths,’ it is erroneously argued, ‘must learn the ancient or foreign languages from tutors, while an acquaintance with their own is spontaneously and inevi-

tably attained ;—in this they require neither instruction nor assistance—reading and observation will be found of themselves sufficient to accomplish all.

The fallacy of this argument will sufficiently appear, when we arrive at the consideration of the study of the English language, as detached and distinguished from the study of English literature: the observations which I am *now* about to offer, relate to the connection of each with the other—perhaps it would be better to say, the union of both. You will, I think, Gentlemen, readily admit, that in order to form a correct estimate of the value and utility of any particular study, it requires to be contemplated not merely in an independent and exclusive aspect, but in its general relation to the entire system and primary object of a liberal education ;—just as we should calculate the dimensions of a mountain, not by its elevation above the valley, but by the comparative altitude of other hills with which it is surrounded. Now the system of a liberal education may be modelled on the principle of comprehending all useful knowledge, which is called general education ; or of preparing the pupils more immediately for some specific occupation or pursuit, which is termed professional education. The object of both, however, must be identical ; namely, that the student may hereafter occupy a respectable, if not an eminent, position in society. And, as an unavoidable inference, we should attach the highest importance to those studies, by which that desirable object may be most effectually promoted.

Regarding the main trunk of education, therefore, as dividing itself into two great branches,—general, and professional education,—you will naturally inquire, what relation the study of the English language, connected with that of English literature, sustains to each of these ? To this I reply, that for professional education it is expedient—to general education it is essential. Happily, in proof of the former of these positions, there is no need that I should lead you far, or detain you long. I have only to bring to

your remembrance the opening Lecture which was delivered within the walls of this University by the Professor of Physiology *, at which some of you, I doubt not, had the gratification to be present. It becomes not me to speak of that gentleman's distinguished rank in his peculiar profession, which has long been (as it ever must be) decided by the unerring suffrage of the public voice: but I may with propriety advert to that combined perspicuity, copiousness, and elegance of diction, which rendered the communication of science from his lips as delightful as it was instructive. I may cite him as an illustrious example of the advantages which redound to a professional man, from an intimate and practical acquaintance with the beauties and peculiarities of his own language; for if—you will bear me witness—if the scientific information which he imparted on that occasion excited the interest of many, the chaste and expressive language in which it was conveyed commanded the approbation of all.—One such example has more influence than a thousand arguments.

Having thus confirmed by example (the most convincing of all evidence) the truth of our first position,—that the study of the English language and literature is expedient for professional education,—I am now to establish the second; that it is an essential part of general education. This point, however, may be promptly decided by the answer to a very simple question, *Why do we educate our children?* To this inquiry a judicious and reflecting parent will reply, 'To promote in the first instance their individual benefit; then to furnish them with the means of contributing to the benefit of others.' Now if the former of these objects is best ensured by correctness of thought, the latter demands in an equal degree accuracy of expression. For though our conceptions may be clear, our sentiments just, our imagination lively, our information varied and extensive; unless we also possess the power of expressing our thoughts in appropriate and adequate terms, all these advantages, great

* Professor Bell.

as they are, will contribute little to the enjoyment or improvement of those with whom we may be connected. While, therefore, the youthful mind, as its powers gradually expand, is copiously stored with materials for future reflection, derived from the oral instructions of sensible and experienced teachers, or from the inexhaustible treasures of ancient and modern literature, the work of education is yet far from complete. Not only should the student be trained to receive and to retain the ideas of others; he must be taught to arrange, to combine, and above all, to express his own; and in so doing, to identify the language of the lips and of the pen with the language of the mind; to acquire, as far as practicable, powers of expression progressively commensurate with the growing capacity of thought. This point, however, notwithstanding its evident importance, is seldom sufficiently regarded in systems of instruction, and consequently the means of attaining it are proportionably neglected. Yet to what other cause, than the want of early attention to the perusal of English authors and the practice of English composition, can we attribute the familiar fact—that the classical student, when summoned to sustain his part in the active intercourse of society, is so often found to speak in his own language with hesitation, and to write with difficulty? Wherefore is he thus embarrassed and perplexed,—but because he feels that his powers of expression are altogether inadequate to embody in a suitable form the conceptions of his mind; and that unless he will hoard his intellectual stores, like the gold of a miser, for his own selfish and solitary gratification, his only alternative is to occupy a much lower place in public estimation, than that to which he is justly entitled?

To point out how this error might be obviated in a system of education which should commence with the opening dawn of the intellectual powers, would be no difficult task; but it will be a much more arduous undertaking to apply the remedy where the evil has been of long continuance; and, above all, to combine the delicacy which the feelings

of such students demand, with that familiarity and minuteness of explanation, which are indispensable to learners of less advanced age, and of inferior attainments. Fully alive to the importance of this part of my duty, I yet hope that I shall be enabled to accomplish it; and I shall feel peculiar pleasure in affording to gentlemen who may favour me with a private interview, any information which they may require on the subjects of the different Lectures, and in directing them to such a course of English reading, as may be calculated to supply their conscious deficiency, while at the same time it is congenial with a classical taste, and gratifying to a cultivated mind. They will not be long in discovering, that regard and admiration are far from being exclusively due to the great masters of antiquity; that their own literature can boast of writers equally eminent in almost every department of composition; and that, if the claims of a language on our attention are to be decided by the number, variety, and excellence of the authors who have employed it, the English language may fearlessly challenge comparison with any other, living or dead.

I am aware that I ought to exhibit the proof of this assertion; and the materials of it, so far as the Latin and Greek writers are concerned, lie ready to my hand. But how can I enter upon a subject at once so ample and so interesting, while labouring under all the disadvantages inseparable from an introductory lecture? Even in a brief passing allusion, there are two of these which forcibly obtrude themselves, and forbid me to proceed:—the employment of terms which are yet undefined, and which therefore may be very imperfectly understood; and the unavoidable reference to authors, with whom it is probable that no small proportion of my audience are unacquainted. How, for example, can I consistently institute a comparison between the three great Epic Poets of England, Rome, and Greece, without having previously developed the nature, the constituents, and the requisites of a perfect Epic? or how can

I effectively place our English dramatic writers in juxtaposition with the masters of Greek Tragedy, unless I have ascertained that those to whom I speak of PEELE, MARLOWE, FLETCHER, JONSON, and MASSINGER, possess some knowledge of their respective works? All of you, Gentlemen, have indeed read SHAKSPEARE; but it would be idle to introduce the name of SHAKSPEARE in comparison with any dramatic writer, ancient or modern. Encircled by all other votaries of the Comic or the Tragic Muse, he reminds us of a tall and stately ship, gliding proudly over the immeasurable ocean, and accompanied by many smaller vessels, several of which are more complete in their rigging, and more perfect in their whole equipment, but all greatly inferior both in weight of metal and costliness of freight. They seem prepared to encounter, and 'able to outlive the storm; but to their majestic consort alone can we apply the glowing language of the poet,—

‘She walks the waters like a thing of life,
And seems to dare the elements to strife*.’

For these reasons, Gentlemen, I have thought it advisable to defer the consideration of the comparative merits of Classical and English literature, until the time arrive for its introduction into the order of the course; pledging myself then to prove, that if the Greek and Latin writers, owing to the superiority of their language over ours in variety, flexibility, and softness, have surpassed us in ease, grace, and elegance of diction; that advantage is fully counterbalanced by the animation, vigour, and energy of expression conspicuous in our own authors, and still more by a magnificence of conception in them altogether unequalled by the most valued relics of antiquity. The familiar image of the eagle soaring upward to the sun, and gazing with undimmed and unaverted eye upon its meridian brightness, has been applied to the Roman Poet, and with still greater

* Byron: Corsair 93, 94.

justice to the Grecian Bard. But England too can boast of one,

‘..... Who rode sublime
Upon the seraph wings of ecstasy—
The secrets of th’ abyss to spy
He past the flaming bounds of space and time,
The living throne, the sapphire blaze,
Where Angels tremble while they gaze.
He saw—but blasted with excess of light,
Closed his eyes in endless night *.’

Here then I dismiss all further reference to the study of English literature, as connected with that of the language;—not, I confess, without reluctance; for it is a theme on which I could expatiate with almost enthusiastic delight,—a theme which is far better calculated to awaken general interest, than the less attractive, but not less important subject, to which I must now direct your exclusive consideration,—the expediency and usefulness of the distinct study of the English language. Your own good sense, Gentlemen, will spare me the necessity of demonstrating a proposition, the truth of which is so obvious, that it may be accounted nearly equivalent to an axiom;—That of all languages to which the attention of the student can be directed, *that* is first entitled to consideration, which will be called into most frequent exercise in active life; and of his proficiency in which almost every individual, with whom he may in future chance to be associated, will be competent to form an opinion. As at Athens the refined ear of a common herb-woman could detect a trivial inaccuracy in the dialect of an accomplished philosopher, so in the present improved condition of society, many persons of the lowest rank, especially in this metropolis, are often no contemptible judges of propriety and purity of diction, and will naturally estimate the acquirements of an individual by the only criterion which they are able to apply. Consequently, if to excel in other languages be creditable, to be deficient in this is

* Milton. Ode on the Progress of Poetry, III. 2.

both injurious and disgraceful ; nor can the English student be too earnestly recommended to cultivate a critical acquaintance with his native tongue. According to the judicious observations of an eminent living author*, who has contributed greatly to facilitate the study of the English language, by restoring that simplicity of structure which is among its principal recommendations : ‘ It is an egregious error to imagine, that a perfect knowledge of Greek and Latin precludes the necessity of studying the principles of English Grammar. The structure of the ancient and that of the modern languages are very dissimilar. Nay, the peculiar idioms of any language, how like soever in its general principles to any other, must be learned by study, and an attentive perusal of the best writers in that language. Nor can any imputation be more reproachful to the proficient in Classical literature, than with a critical knowledge of Greek and Latin, which are now dead languages, to be superficially acquainted with his native tongue, in which he must think, and speak, and write.’

The distinguished author to whom I am indebted for this seasonable quotation, has combined in its concluding sentence the three great constituents of a perfect English scholar. He should be able to think, to speak, and to write in his own language : to think with freedom and correctness ; to speak with promptitude and propriety ; to write with ease and perspicuity. The first of these qualifications, as we have already seen, is more immediately connected with, and dependent on, the study of literature in general, and specifically of English literature, as yielding to no other branch of the majestic and ever-expanding tree of knowledge in the luxuriance of its foliage and the flavour of its fruit ;—the second and third involve the study of Grammar. The object of Grammar is to convey the knowledge of a language ; and it is quite an error to imagine that grammatical information can only be attained by a mere mechanical

* Dr. Crombie : *Treatise on the Etymology and Syntax of the English Language* ; Concluding Remarks.

process,—by the exertion of the memory apart from the exercise of the intellect. ‘Grammar, in its general principles,’ observes the author of that invaluable work, *The Philosophy of Rhetoric*, ‘has a close connection with the understanding.’ Nor is this assertion more true of Grammar in general, than of English Grammar in particular. Accordingly, I can enumerate many ways in which the intellectual powers are agreeably and profitably exercised in this study, as it may be pursued by students of not very immature age; such, for example, as inquiring into the formation of alphabets, investigating the etymology of words, tracing cognate terms through various languages, observing the gradual influx of new words and phrases, comparing the diversified modes of expression by which the same meaning may be conveyed, examining the structure of the several languages which are derived from one parent stock, and many others: but we must not forget that the plan of the *Lectures on the English Language* still remains to be indicated; and I will therefore confine myself to one further benefit resulting from the study of English Grammar, the value of which, Gentlemen, you can all appreciate:—I mean, the acquisition of a copious stock of words, coupled with judgment to select the most appropriate.

Words are defined by grammarians to be the signs of things or of ideas. Obviously, therefore, those words are to be preferred, both in speaking and in writing, which most correctly represent the thing or idea intended, and which not only convey the desired impression to the hearer or reader, but convey no impression of an opposite or different character. But how can the student expect to attain the faculty of thus discriminating his words, without a previous initiation into the mysteries of the language; without having traced terms backward to their original signification, and followed them onward to the meaning which is now assigned to them by that law of custom, from whose decision there is no appeal*. For the observation of Horace respect-

* ‘*Multa renascentur, quæ jam cecidère.*’—Hor. *Ars. Poet.* 70.

ing the Latin is equally applicable to the English tongue,—that many words, in the lapse of time, have widely deviated from their primitive signification; some have become diametrically opposed to it; many terms which were employed by the early writers are now wholly discarded; and not a few are introduced by authors of the present day, which deserve, and in all probability will hereafter experience, a similar fate. If therefore the English student is anxious to unite in his own speech and writing the three distinguishing features of a chaste and perspicuous style:—first, that his words be pure English, free from the rust of obsolescence on the one hand, and the tinsel of novelty on the other; next, that the construction and arrangement of his sentences be in the English idiom, unalloyed by those solecisms which may pass undiscovered in speech, but will infallibly be detected in writing; and lastly, that his words and phrases be employed to express the precise meaning which custom has affixed to them, so that obscurity and ambiguity may be altogether banished from both,—these useful ends can only be attained by combining a careful perusal of the great English masters in every species of composition, with a close examination of their diction, and an accurate investigation of their style. He must not only compute the dimensions and ascertain the exact proportions of the building, but inspect the quality and substance of the materials of which it is composed.

Permit me now, Gentlemen, to direct your attention to the projected plan and arrangement of the Lectures on the Principles and Practice of English Composition, to which the present is introductory.

My plan for the critical study of the English language, as adapted to young men who have previously received the rudiments of a classical education, embraces three great divisions.

I. THE HISTORY OF THE LANGUAGE, comprehending a view of its origin, formation, progress, and perfection.—I use the term perfection in a relative sense (for absolute

perfection can be predicated of no language whatever) ; but we may assume that a language, to whose stock of words no material addition has been made for upwards of two centuries, may now be accounted *stationary*, or perfect in proportion to its capacity.

II. THE PHILOSOPHY OF THE LANGUAGE ; under which head I include the classification and analysis of its constituent parts, or sorts of words ; their relation to, and dependence on, each other ; the principles of pronunciation and orthography ; the etymologies of words ; the construction of sentences ; the force and harmony of periods : in short, all that relates to the genius and structure of the language.

III. THE USE AND APPLICATION OF THE LANGUAGE in the various kinds of speaking and composition ; commencing with the plain and perspicuous, and proceeding upward to the elevated and majestic style.

On each of these divisions it will be expedient, and I hope not tedious, to offer a few observations.

An inquiry into the origin, formation, and progress of the English language, may be compared to a voyage up the channel of a magnificent and hitherto unexplored river. In ascending the stream, as you pass the confluence of one tributary after another with the parent flood, the width may be observed continually to diminish, and the depth gradually to decrease ;—at length all further progress is impeded by some natural barrier ; and though the river has now dwindled to a rill, the fountain whence it issues cannot be precisely ascertained ; for it divides itself into innumerable branches, or escapes among impassable rocks. Thus in tracing the stream of our language backward to its remoter sources, when we have ascended beyond the derivatives which successively flowed into it from the Latin, Greek, and French, and arrived at the scanty dialect of our Saxon forefathers,—henceforth all is obscurity and conjecture. The Anglo-Saxon may indeed be identified with the Gothic or Teutonic, of which either it is a dialect, or both have originated in one common source. But where is

that source to be found? Many plausible and ingenious hypotheses have been framed on this interesting subject, of which the most recent, and to my mind the most satisfactory, is that of Colonel VANS KENNEDY, a gentleman whose learning and ability are not only honourable to himself, but throw a lustre on his profession; who in his able and elaborate *RESEARCHES INTO THE ORIGIN OF LANGUAGES* refers the Gothic to the Thracian or Pelasgic, and that again to the Sanscrit, which he considers to have been the language of Babylonia or Assyria, whence the Pelasgi originally migrated. The arguments urged in support of this hypothesis will be reserved for the course of lectures on English Literature, in which the question of the probable origin of our language will be more fully discussed. The earliest date which we shall assume in our present inquiries, as verified by competent authority, is the year after Christ 360, about which time the Gothic language is said to have received an alphabet from Ulphilas, bishop of Mœsia. His claim to *this* honour has indeed been contested; but not to an honour infinitely more exalted and enduring;—that he employed the recent invention for the noblest and most beneficial of all purposes—for enlightening his ignorant countrymen by the communication of the Scriptures. His translation of the New Testament is now the sole remaining relic of the Gothic language.

The Anglo-Saxon then, a dialect of the Gothic, or derivable from a common root, appears to be the groundwork of the present English tongue, more than three-fifths of the words now in use being referable to a Saxon origin; and, with comparatively few exceptions, all the monosyllables, which are the radical terms of the language*. When the Saxons first invaded Britain, they were a barbarous people, without learning, and, in all probability, even without an alphabet; and if ever the intimate connection between

* I am under great obligations in this part of the Lecture to Mr. Sharon Turner's *Histories of the Anglo-Saxons, and of England*, which, once for all, I readily and gratefully acknowledge.

mental cultivation and moral goodness could be doubted for an instant, it would derive 'confirmation strong as holy writ' from the unparalleled atrocities with which the Saxon inroads were accompanied. The conquest of Britain by the Romans had eventually tended to the benefit of its rude inhabitants, by introducing among them the institutions, manners, and habits of a more polished people: but the war which the Saxons carried on was a war, not of conquest, but of extermination. Accordingly, wherever they succeeded in establishing themselves, owing to their inhuman and detestable policy of extirpating the natives, all vestiges of the original language entirely disappeared. The English language, observes Mr. Horne Tooke, has absolutely nothing from the Welch*: nor is the conclusion of this eminent philologist at all invalidated by the circumstance, that a few isolated terms may have gained admission; for the genius and structure of the two languages are radically and totally distinct. The gloom, however, in which our island was enveloped by the cloud of Saxon barbarism, though palpably and extensively diffused, was not destined to be permanent. The Christian religion, which was introduced into England by Augustine and his brother missionaries, A.C. 570, rose upon this land of darkness with the benignant influence of a vernal sun after a long and dreary night of storms; while civilization, knowledge and humanity, revived with returning day. To those pious men is England most probably indebted for the rudiments of her written language, as we infer from the Saxon alphabet, which is evidently a modification of the Roman characters. The precise date of its invention cannot be ascertained, but may be assigned without much hesitation to the period immediately succeeding the arrival of the Roman missionaries; since there are compositions extant in the Saxon tongue, which bear date within a century after this event. Of these interesting relics the most ancient are the

* *Diversions of Purley*, vol. ii. p. 311, quarto edit. 1805.

poems of Cædmon, a monk of Whitby in Yorkshire, who devoted his simple Muse to sacred subjects, and who died A.D. 680. On the peculiar character of Saxon Poetry I shall expatiate hereafter; suffice it now to observe one remarkable circumstance,—that in all the remains of Saxon literature, which are scattered over a period of five centuries, from the Hymn of Cædmon to the Saxon Chronicle, which last, from the events which it records, must be dated subsequently to the year 1150, nearly a century after the Conquest,—there is little perceptible variation of diction, and no improvement of style*. The language appears neither to have retrograded nor advanced during that long interval; a peculiarity only to be explained by the circumstance, that the great luminaries of those ages—and they are names which would have done honour to any age,—Aldhelm, Bede, Alcuin, Erigena, and Asser—despising the poverty of the rude Saxon dialect, wrote almost exclusively in Latin. Alfred only—the royal, patriotic, and philosophic Alfred—preferring the benefit of his people to his own literary renown, expressed in the contemned and neglected Saxon the sentiments of a mind, whose vigour few have equalled, and the feelings of a heart, whose virtues none have surpassed. Too early for the interests of England, that sun went down; and with it was eclipsed for ever the light of Saxon literature.

On the accession of the Conqueror to the throne of Alfred,—though the Norman French, after his example, was spoken at court, and employed by his authority in all judicial proceedings,—yet the Anglo-Saxon continued long to be the dialect of the common people. The efforts of each to expel the other were ineffectual; and ended, as might be supposed, in the exclusive adoption of neither. The Norman stock was grafted on the Saxon root, and the first product of their union was a kind of intermediate diction neither Saxon nor Norman. The language at this period is

* Conybeare's Illustrations of Anglo-Saxon Poetry, lxxxvi.

*It had
a small
copy
of the
Chronicle*

beautifully compared by Mr. Campbell* ‘to the new insect stirring its wings before it has shaken off its aurelia state.’ Yet I scarcely think that the insect, in this stage of existence, can be said to give any indication of that mature beauty which is afterwards displayed, when, expanding its many-coloured wings, it sports in the sunbeam, or floats upon the breeze. Certainly none will dispute, that this early stage of our language augured but feebly of its present finished state of excellence.

When the change to which I have adverted (the change I mean of pure Saxon into the intermediate diction) actually ensued, it consisted principally in the suppression of the inflections of the Saxon noun and verb, and the adoption of French terms. In Layamon, the earliest writer of this class, who flourished about the year 1200, the former of these modifications may be distinctly observed; but the latter is almost, if not wholly, imperceptible. The specimens which Mr. Turner and Mr. Ellis have exhibited from this writer do not contain a single term or phrase of French origin, although his principal work is a translation from the French. We must therefore look to a later period for the introduction of French words; and we shall detect the sources of these additions to our language, in the many translations of Norman Chronicles, Lives of Saints, Romances, and Moral Treatises, into the popular Saxon dialect, which appeared between the middle of the thirteenth and the end of the fourteenth centuries. Owing to the poverty of the Anglo-Saxon, and still more to its exclusive employment by the inferior ranks of society, there would be of necessity many words and phrases, more especially on subjects connected with chivalry, for which it could afford no corresponding terms. These, therefore, would require to be supplied from other sources, and accordingly they were supplied; but the supply was more than commensurate with the demand. So rapid was the influx of new words, that Robert of Glou-

* Essay on Poetry, p. 33.

cester, who wrote not more than eighty years after Layamon, has in twenty-six verses not less than twenty words of French extraction. Indeed, during the immoderate and unaccountable popularity of metrical romances, when they were not only chanted by itinerant minstrels in the halls of the nobles and in the refectories of the convents, but even by the serfs and vassals around their rustic board; a torrent of French words intermingled with the stream of our language, which, if they rendered its waters more deep and copious, caused them at the same time to appear turbid and discoloured. Many of these words, being rejected by the purer taste of more enlightened ages, are now only to be found in the works of those venerable but neglected authors, whose deep slumbers are rarely invaded, except by the intrusion of the philologist and the antiquary. Robert de Brunne, who flourished about the year 1340, and who is distinguished by the able historian of the Anglo-Saxons as "the first of our poets who wrote in a vernacular style which is at all readable now," is remarkably free from the affectation of French terms; but the Saxon inflections are almost entirely disused by him; while the structure of his sentences, and even the rhythm and cadence of his verse approximate closely to the present English. After him the stream of language (which, be it remembered, we are now *descending*) becomes continually deeper and more expanded. Between Robert de Brunne and Chaucer flowed in a most valuable accession of Latin derivatives, which will hereafter be particularly classified; and perhaps about the reign of Henry the Eighth, the abundant stores of the Greek language contributed their portion to enrich our own. In this reign the study of Grammar was reduced to a system, by the promulgation of many grammatical treatises, one of which was esteemed of sufficient importance to be honoured with a royal name. It was called 'The Grammar of King Henry the Eighth,' and to this*, 'with other kindred works, the young Shakspeare was probably in-

* Drake's Age of Shakspeare,—a work which to mention is to praise.

debted for some learning and much loyalty.' But the honour of producing the first English Grammar is claimed by William Bullokar, who published in the year 1586, 'A Bref Grammar for English,' being, to use his own words, 'The first Grammar for English that ever waz, except my Grammar at large.' Rhetoric, however, had already been ably and successfully illustrated. 'The Art of Rhetoric, for the use of all such as are studious of Eloquence,' was 'set forth in English by Thomas Wilson, 1553.' Then, as though the Genius of the Language had waved her enchanted wand, appeared Grammars and Dictionaries in rapid succession; philological researches became subjects of universal interest;—and so sudden and surprising an improvement was effected in the language, that it no longer reminds us of the insect feebly stirring its wings, but of the young eagle essaying its first adventurous flight, soaring upward in the fearlessness of conscious vigour, and attaining a height in its earliest excursion, which no subsequent ascent can exceed. On sufficient grounds has Dr. Johnson observed*, 'From the authors which rose in the time of Elizabeth, a speech might be formed, adequate to all the purposes of use and elegance. If the language of theology were extracted from Hooker and the Translation of the Bible; the terms of natural knowledge from Bacon; the phrases of policy, war, and navigation from Raleigh; the dialect of poetry from Spenser and Sidney; and the diction of common life from Shakspeare, few ideas would be lost to mankind for want of English words in which they might be expressed.' Here then I shall for the present close my sketch of the History of the English Language, only observing, that it will be my aim to excite an interest in this part of the course, by illustrating, as I proceed, the gradations of the language, in specimens so variously selected, and so minutely examined, that its progress shall be distinctly traced, even by those students who are now wholly unacquainted with the writers of the 'olden time.'

* Preface to his Dictionary. Hist. of the English Language.

From the HISTORY we pass, by an obvious and easy transition, to the PHILOSOPHY of the Language, a term which I have adopted rather from regard to comprehensiveness of arrangement, than to its primary and peculiar signification. Did I not fear to be suspected of invading the department of my medical colleagues, I should almost prefer to entitle it the ANATOMY OF THE LANGUAGE. It involves, in fact, a species of dissection in which I possess one great advantage over those gentlemen; there is here no deficiency of subjects, and they may be procured without any difficulty. In this division of the Lectures, my first step will be to exhibit a series of alphabets derived in succession one from another*: the Ionic Greek, the Roman, the Gothic, the Anglo-Saxon, and the English. This will naturally lead to a comparative view of the English Alphabet with others, both ancient and modern; an inquiry into its deficiencies and redundancies; an examination of the various sounds which it produces, and the combinations of letters by which they are produced. This is called the science of ORTHOEPY, or the just utterance of words. ORTHOGRAPHY, in the proper sense, is the expression of words by suitable characters or letters: and here I shall content myself with laying down a few rules to be applied in doubtful cases; since to enter into detail would be tedious, and in most instances unnecessary. Much time and attention, on the other hand, will be devoted to a subject, which I account of peculiar interest; viz. the ETYMOLOGY OF THE LANGUAGE. Admitting the position first adduced, and, I think, established by Mr. Tooke, that there are in English, properly speaking, but two essential parts of speech, Noun and Verb; I shall yet develope in succession the nature, properties, and use of all the Parts of Speech as they are generally enumerated by grammarians, and for the common appellatives of which I know of no others that could be substituted with advantage. First in order, is the Noun, the parent of all other speech, with its

* Astle: Origin and Progress of Writing.

accidents of case, gender, and number;—then succeed those which are obviously derivatives or abbreviations of the noun,—the Article, Pronoun, and Adjective; each of which will be distinctly considered, and separately applied. We shall thus arrive at the Verb, which it will be my especial care to disencumber of those multifarious moods and tenses with which it has been needlessly loaded by grammarians, and to exhibit it in that simple form in which it really exists, and which constitutes one of the peculiar beauties of our language. Here I shall be afforded the opportunity of showing incidentally, that there is no point on which grammarians have so widely erred, as in a determination to assimilate the English language to the Latin and the Greek; from both of which it substantially differs, in the nature of its idioms and the construction of its sentences, however it may be indebted to them for ample and invaluable additions to its vocabulary. The verb will conduct us to the Participle, a word on the judicious employment of which a pure and perspicuous English style is perhaps more dependent than any other, and which will therefore require to be examined—I had again almost said, anatomized—with proportionate care and assiduity. The remaining parts of speech, which are derived from nouns or verbs indiscriminately, as Adverb, Conjunction, and Preposition, will be referred to their origin, and exemplified in their use. The Interjection will be speedily dismissed, which, indeed, is scarcely to be ranked among the parts of speech, being in most cases instinctive and mechanical, the sign of impulse rather than of idea. Rules will be given throughout, by which the etymons of words may be ascertained; and an attempt will be made to classify those final or inceptive syllables which indicate a Latin, Greek, or French origin: all other English words, with the exception of a few scientific terms introduced from the Arabic, such as '*algebra*' '*alcohol*,' '*zenith*,' '*nadir*,' &c., and a very few from the Welch, being resolvable into the Saxon, or one of the Northern dialects. And, which will be a prominent feature of the

plan, not a single general principle of any moment shall be brought forward, without being copiously illustrated by examples, in the first instance by the teacher, and afterwards by the pupils, either from memory or invention.

Reverting now to our former comparison between the acquisition of a language and the erection of a building, we may presume that by this time the foundation will have been excavated, the materials prepared, the effect of their judicious combination and the proportion of their respective parts fully ascertained, and every thing in preparation for the production of a solid and substantial, but not an ornamental structure. In other words, we may now suppose the student to be fully provided with every knowledge of the language, which is requisite for composing with precision and perspicuity. But how shall we ensure that he *will* be thus provided? For it must be obvious to all of you, Gentlemen, that the mere exposition of the theory of a language in lectures, however lucid or interesting those lectures may be at the time of their delivery, can be of little permanent advantage, unless the information thus conveyed be deeply imprinted on the memory, and fully apprehended by the understanding. To ensure the former of these objects, therefore, I shall make it my particular request, that at the close of each lecture, every student will deliver to me an epitome in writing of the subjects which have been discussed, to which purpose a sufficient interval shall be appropriated. I shall then dictate a series of questions on the lecture immediately preceding, and as the answers are presented to me, an opportunity will be afforded of offering such observations on the epitome as may seem likely to be useful. Thus will also be ensured the advantage of the teacher coming into personal communication with every individual in his class, and ascertaining their respective proficiency by oral as well as written examinations. And let me here express my full persuasion, that for the preservation of order on this and on all occasions, I shall have a sufficient guarantee in that propriety of demeanour and delicacy of feel-

ing which are always conspicuous in young men of liberal education, especially when they see in their instructor—what I trust I may venture to promise them—a lively solicitude for their welfare, and unwearied endeavours for their improvement.

Having thus provided, during the previous portion of the course, for those important points,—the recollection and understanding of the principles of the language,—I purpose to proceed, Gentlemen, to the third great division, **THE USE AND APPLICATION OF THESE PRINCIPLES**, in various styles of composition. The students will here commence their written exercises with themes or essays on given subjects in a plain and perspicuous style, from which every species of ornament will be in the first instance studiously excluded. For to speak and to write with correctness are the first considerations; elegant and graceful decoration, however desirable, are yet of secondary import. A very effective oration may be delivered, a very interesting letter written, a very ingenious essay composed, without a single ornament from the commencement to the close. Assuming therefore that propriety of costume is indispensable to the advantageous display of ornament, I shall attempt to secure in the first instance that purity and propriety of diction, unaccompanied by which, figurative language must be always inconsistent and not seldom ridiculous. This being attained, I shall no longer defer the description and explanation of the various figures of speech, commencing with that first-born of fancy, **SIMILE**, and proceeding next to others of the same class, **METAPHOR**, **PERSONIFICATION**, **ALLEGORY**, and the rest; constantly illustrating the misemployment, as well as the proper and legitimate use of each, by appropriate examples, selected as far as practicable from writers of established reputation. For I consider it an object of far greater moment to preclude the admission of inappropriate or unnatural metaphor, than even to supply directions for its judicious and tasteful management: remembering, that while prose composition of almost every description may

interest and even attract, without any decoration whatever, an unseasonable ornament is a blemish which cannot fail in written composition to offend the eye, and seldom even in speaking to grate upon the ear. Never do these '*purpurei panni*' appear to so little advantage, as when they differ in colour or in texture from the garment which they are intended to adorn.

I propose to conclude the course with a few lectures on style, delineating the character, analysing the constituents, and exemplifying the employment of various styles, which I will not now detain you by enumerating. Nor yet will I stop to particularize some other subjects, which could not consistently enter into the order of the course, but may be profitably considered in a single lecture; such for example as an investigation of the causes of Ambiguity of expression and of the means by which it may be avoided. I will only express my hope, that those students who may have pursued the course throughout, will be enabled at its termination to speak their own language with accuracy, and to write it with perspicuity, if not to speak with fluency, and to compose with elegance.

Such then are the duties which I consider to be connected with my office, and such are the means by which I trust and purpose to discharge them. But, Gentlemen, I cannot enter upon the arduous and important task which awaits me in this University, without reminding you—and I would do so with that seriousness and solemnity which become my office here and my profession everywhere—that mere intellectual improvement is not, or should not be, the exclusive or even the primary object of education. Moral and religious principles are infinitely more momentous to the character and interests of the future man, than the cultivation of the mind alone, whether we look to the individual himself, or to the influence which he will hereafter exercise upon society. The talented and accomplished scholar may shine in public and social life; may astonish by the depth of his erudition, or charm by the graces of his eloquence,

or dazzle by the coruscations of his wit;—but the MAN OF PRINCIPLE ONLY is the centre round which domestic felicity revolves; he ONLY contributes to the real and enduring benefit of his near and dear connections. Contemplated in this aspect—and few I think will refuse thus to contemplate it—the morality which may be learned from ANY system of religious opinions that professes to take the Bible for its basis, deserves to be estimated far more highly than the most extensive acquirements and even the most splendid abilities, if not governed by those motives and principles of action, which alone can direct them to the production of solid and abiding advantage. Devoid of these principles, they have been almost invariably found—like sharp and polished weapons in the hands of a lunatic—to inflict a mortal wound on their possessor, and strike deep at the best interests of society. In the history of our literature, more particularly of the drama, it will be my painful duty to point out too many names which exemplify this assertion;—too many, whose wreath of imperishable laurel is interwoven with bitter and deadly herbs, which, like the envenomed diadem that encircled the brow of the Christian virgin in the days of fiery persecution, insinuate a subtle poison into the veins, and convey it even to the heart!

Gentlemen, I do not offer these observations from any apprehension that the course which I purpose to take in this respect can require apology.—I believe that the absence of such considerations on such an occasion would do violence to your feelings,—I am sure it would be a dereliction of my duty. I owe it to the Council of the University, in whose benevolent and enlightened views I most heartily concur, and in the purity of whose motives I most implicitly confide; I owe it to those parents, who may entrust the education of their sons to this rising Institution, and who, whatever be their religious tenets, are fully aware that no degree of mere intellectual attainment could compensate to their children for the absence of sound and salutary moral principle; I owe it to my own character, as a member and

minister of the National Church, to avow openly and unreservedly, that both in these Lectures—and in the other course which it will be my duty to deliver, I shall invariably aim to impart moral, as well as intellectual instruction. These I can never consent to separate, for it has been the business of my life to combine them; and did I consider the union incompatible with my office in this University, I should not address you now. But in all my Lectures, more particularly when treating upon that glorious and inexhaustible subject, the LITERATURE of our country—I shall esteem it my duty—and I trust shall find it my delight,—to inculcate lessons of virtue, through the medium of the masters of our language. Nor to those parents who are acquainted with the earlier productions of English Literature, will such a declaration appear superfluous or misplaced. *They* know, that the gems with which it is so copiously adorned, sometimes require to be extracted and exhibited with a careful hand, lest they should convey pollution with the foul mass of daring profaneness or disgusting wantonness in which they are too often incrustured. *They* at least, therefore, will appreciate my motive, when I declare, that never, in tracking the course of those brilliant luminaries that sparkle in the firmament of our literature,—never will I suffer the eye of unexperienced youth to be dazzled by the brilliancy of genius, when its broad lustre obscures the deformity of vice; never will I affect to stifle the expression of a just indignation, when wit, taste and talent, have been designedly prostituted by their unworthy possessors to the excitement of unholy passions, the palliation of guilty indulgences, the ridicule of virtue, or the disparagement of religion. All extracts which I may present from successive authors in exemplification of the progress of our language; all specimens which I may exhibit as models of composition, shall be selected with a scrupulous regard to their scope and tendency: nor will I, however apt or pertinent the illustration which might thus be afforded, cite any passage which insinuates an immoral sen-

timent, or implies, however obliquely, an impure idea. And I reiterate my full conviction, that in thus combining the moral instruction with the mental improvement of the students, I shall act in accordance with the great principle which influences the directors and supporters of this noble establishment. Their object is indeed to accelerate the 'march of intellect,'—a phrase now scarcely preserved by its expressiveness from degenerating into mere cant, and for which I would prefer to substitute the progress of knowledge. But they know that the march of intellect, or the progress of knowledge, call it which you may, will never be retarded, because she is accompanied by her dearest and best associates, virtue and religion. They see that knowledge and virtue derive a lustre from Religion, which she cannot derive from them; for if knowledge be excellent, and virtue admirable—RELIGION IS DIVINE.

Gentlemen, in thus introducing the sacred name of RELIGION to an assemblage like the present, where various and perhaps conflicting opinions are entertained by many on this most important of all subjects, I feel that I have ventured upon difficult ground. Let me not however be suspected of affixing an exclusive meaning to the word. Firmly attached, from examination and reflection, to that form of Christianity which is the established religion of the state, I yet disclaim from my heart the most distant intention of interfering with the sacred right of private judgment, or of compromising in any degree the leading principle of this truly liberal Institution,—that scientific and literary pursuits have no connection whatever with the religious persuasion of any individual. While therefore I announce with unfeigned gratification, that the munificence of noble and distinguished individuals connected with the University has provided the means of religious instruction for students of the Church of England*—a means which it shall be my care to make effec-

* The particulars of this institution are subjoined in the Appendix.

tual,—not to such alone will the moral lessons, which may incidentally be conveyed in these lectures be adapted. There I shall make no distinction, for there will I know no difference; and if there are any to whose peculiar opinions violence will be offered, those only are the persons who discard from their system, whatever it be, the PRACTICAL INFLUENCE OF MORAL PRINCIPLES, and who, in the cultivation of the intellect, the most valuable endowment of our nature, have no higher or nobler aim than to advance their sordid interest, and minister to their sensual enjoyment; regardless alike of the happiness of their connections, the welfare of society, their own true dignity, or the honour of their God. Never, never may this seat of learning be desecrated by the intermixture of such persons with its train of youthful and ingenuous students; or if any such enter its walls, may they retire from hence, living instances of the truth of that approved saying, ‘THAT THE CULTIVATION OF THE MIND IS THE SUREST GUIDE TO VIRTUE, THE MOST EFFECTIVE AUXILIARY OF RELIGION!’

THE END.

PRINTED BY RICHARD TAYLOR,
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 RED LION COURT, FLEET STREET.

APPENDIX.

IN the fourth article of the last Quarterly Review, Number 77, on Elementary Education, occur the following observations; to which I feel it an imperative duty to offer a reply.

"Some good may be expected from the rivalry between the King's College and the Gower Street one. They are already mutually beholden to each other. King's College will owe its existence to the earlier Institution; and to the announcement of the latter it is owing that the irreligious principle of the Gower Street scheme has been abandoned." P. 143.

The latter part of this statement is wholly incorrect. If the 'irreligious principle' to which the Reviewer alludes ever existed (which I am far from being disposed to admit), it most certainly was not abandoned in consequence of the announcement of King's College. That Institution was founded on the 21st of June, 1828; and on the 27th of May, nearly a month previous to its establishment, had the following Advertisement appeared in the Times Newspaper.

"UNIVERSITY OF LONDON.

"RELIGIOUS INSTRUCTION.

"We the undersigned Professors in the University of London, who are Clergymen of the Established Church, having from the period of our appointment entertained the intention of providing RELIGIOUS INSTRUCTION for those Students who are members of our own Church, do hereby give notice that final arrangements have been made, with the full approbation of the Council, for that purpose. An Episcopal Chapel has been purchased contiguous to the University, to be called "The University Chapel," where accommodation will be afforded to the Students for a due attendance on divine service, and where a Course of DIVINITY

LECTURES will be regularly delivered during the Academical Session. Parents and others interested in this arrangement may learn further particulars by applying to Mr. John Taylor, Bookseller and Publisher to the University, 30 Upper Gower Street.

“THOMAS DALE, M.A., Camb. Professor of English Language and Literature.

“DIONYSIUS LARDNER, LL.D. Professor of Natural Philosophy.”

It may possibly be insinuated, that the rumour of the intended College exercised some influence in causing the measure; but even this I am fully prepared to disprove. So far back as February 1828, when not even a whisper of a ‘rival’ establishment had reached our ears, I was associated with my colleague, Dr. Lardner, in forming a plan for the Theological and Religious Instruction of such Students in the University of London, being members of the Church of England, as might be willing to receive it,—of course without infringing on the fundamental principle of the Institution. For obvious reasons the Council in its official capacity could not be expected to take any part in these arrangements; but not a few individuals were speedily found among the proprietors and friends of the University, who at once perceived the expediency of the proposed scheme, and promptly extended to it their cordial and benevolent assistance. The complete execution of the plan was indeed impeded by unforeseen circumstances; but in all probability a project will ere long be submitted to the public, by which it may yet be most fully and effectually realized. The annexed plan of the Theological Lecture will be sufficient to justify *some* among the friends of the University from the charge of indifference to Religion.

I have only to add, that I utterly disclaim and disavow any suspicion of wilful misrepresentation on the part of the Reviewer. The Quarterly Review has always been conducted in a spirit which would disdain such artifices, however they might be subservient to the cause which it was advocating. Nor have I any doubt that the proofs which I have exhibited of the incorrectness of the statement, will lead to such a disavowal of it, as the circumstances may appear to demand.

UNIVERSITY OF LONDON.

DIVINITY LECTURE,

*Founded for the Religious Instruction of Students who are
Members of the Established Church.*

JULY 4, 1828.

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LECTURER.

THE REV. THOMAS DALE, M.A. Camb.

*Professor of the English Language and English Literature in the
University of London.*

THE Theological Lectures on this Foundation constitute a part only of that plan which was originally formed for the Religious Instruction of Students of the Established Church, and which experienced such prompt and liberal support from the noble and distinguished individuals whose names are subjoined. Circumstances having unfortunately precluded, for the present, the complete execution of the proposed scheme, it has been considered expedient to modify the character and the subjects of the Lec-

tures, with a view of supplying, as far as practicable, the unexpected and important deficiency.

The foundation of all Religion is the Being of a God. The first part of the Course will accordingly be devoted to the direct proof of the Existence of the Deity, combined with an exposition of His Attributes; and connected with an application of the whole to Man, as the creature of His power and the subject of His moral government. This Division will include a comprehensive view of the principal Arguments for the Immortality of the Soul, in which the objections of Atheists and Materialists will be incidentally noticed and refuted.

An Inquiry into the Moral character of Mankind will immediately succeed this consideration of the DIVINE Attributes. It will be demonstrated, by the combined evidence of personal and recorded experience, that Man is uniformly a fallen and degenerate being; and, consequently, unable to render that perfect obedience which is imperatively demanded by the essential and inseparable perfection of a Divine Law. Hence will be appropriately deduced the necessity for a Mediatorial System, as developed in the Scriptures.

The attention of the Class will next be directed exclusively to Revealed, as distinguished from Natural, Religion. The divine Origin of the Old and New Testaments will be established successively by internal and external evidence; and the Course will be terminated by a few Lectures on the End and Object of the Christian Revelation; its compatibility with the character of the Deity, and its adaptation to the circumstances and condition of mankind. Here also the principal objections to these Doctrines will be reviewed and answered.

It has been observed that these Lectures form a part only of the objects which were originally contemplated in the Plan of Theological and Religious Instruction. A Chapel had been procured in the immediate vicinity of the University, where it was designed that accommodation should be provided for the attendance of Students on the Sabbath. Thus Theology as a Science might have been united with Religion as a Principle; and an acquaintance with the theory and the evidences of the Christian System might have been directed to a practical result. This object has been twice frustrated by the capricious and evasive

conduct of an individual, in direct violation of a positive legal agreement (the original of which is in Mr. Dale's possession), and which can be produced whenever circumstances may require. A plan, however, is now in preparation, and will probably ere long be submitted to the public, by which it is hoped that this great object (rendered by existing circumstances peculiarly desirable) may yet be carried into effect upon a more extended scale, and with fairer prospects of permanent efficiency.

In the mean time temporary accommodation has been procured at No. 62 Gower Street, where the Lectures will be delivered for the present Session. Tickets of admission to the Course, 1*l.* 1*s.* each, may be had of Mr. Taylor, Upper Gower Street. As however it is the leading feature of the plan to provide Religious Instruction for ALL who may be anxious to avail themselves of the opportunity thus afforded, the Lecturer notifies that any Student of the University may be supplied with a FREE ADMISSION on application to him, either personally or by letter.

The Lectures were commenced at Two o'clock on the afternoon of Saturday, February 21, and will be continued every Saturday at the same hour until the completion of the Course.

•• *For the List of Subscribers see the next page.*

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October 1, 1823.

UNIVERSITY OF LONDON.

ENGLISH LANGUAGE AND LITERATURE.

THE Professor of the English Language and Literature commenced his Course of Lectures "On the Principles and Practice of English Composition," on Thursday, November 6th, at Half past Two, and will continue them, at the same hour, on Tuesdays and Thursdays, and at Half past Nine on Saturdays, until the close of the Session. The subjects of these Lectures have already been sufficiently indicated in the Outline published in the "Second Statement," and in the "Introductory Lecture," which may be had of Mr. Taylor, 30 Upper Gower Street.

The Course of Lectures on English Literature will commence on Tuesday, December 2nd. For the accommodation of gentlemen who may find it inconvenient to attend the whole, the Course will be separated into four Divisions, any one or more of which may be selected at pleasure. Fee for any one Division, £1; for the whole Course £4, to Students nominated by a Proprietor. To those who are not nominated, there is an addition of 7s. 6d. for each Division, or £1 10s. for the whole Course.

DIVISION I. 14 Lectures.

Inquiry into the Origin, Formation, and Pro-

gress of the English Language . . .	3 Lectures.
History of English Literature, 1st period .	3 Lectures.
History of English Literature, 2nd period .	4 Lectures.
History of English Literature, 3rd period .	4 Lectures.

DIVISION II. 14 Lectures.

Origin and Progress of the Drama . . .	2 Lectures.
Dramatic Poetry	8 Lectures.
Metrical Romances	2 Lectures.
Miscellaneous Poetry of the 1st period .	2 Lectures.

DIVISION III. 12 Lectures.

Epic Poetry	6 Lectures.
Humorous and Satirical Poetry	3 Lectures.
Lyrical and Miscellaneous Poetry	3 Lectures.

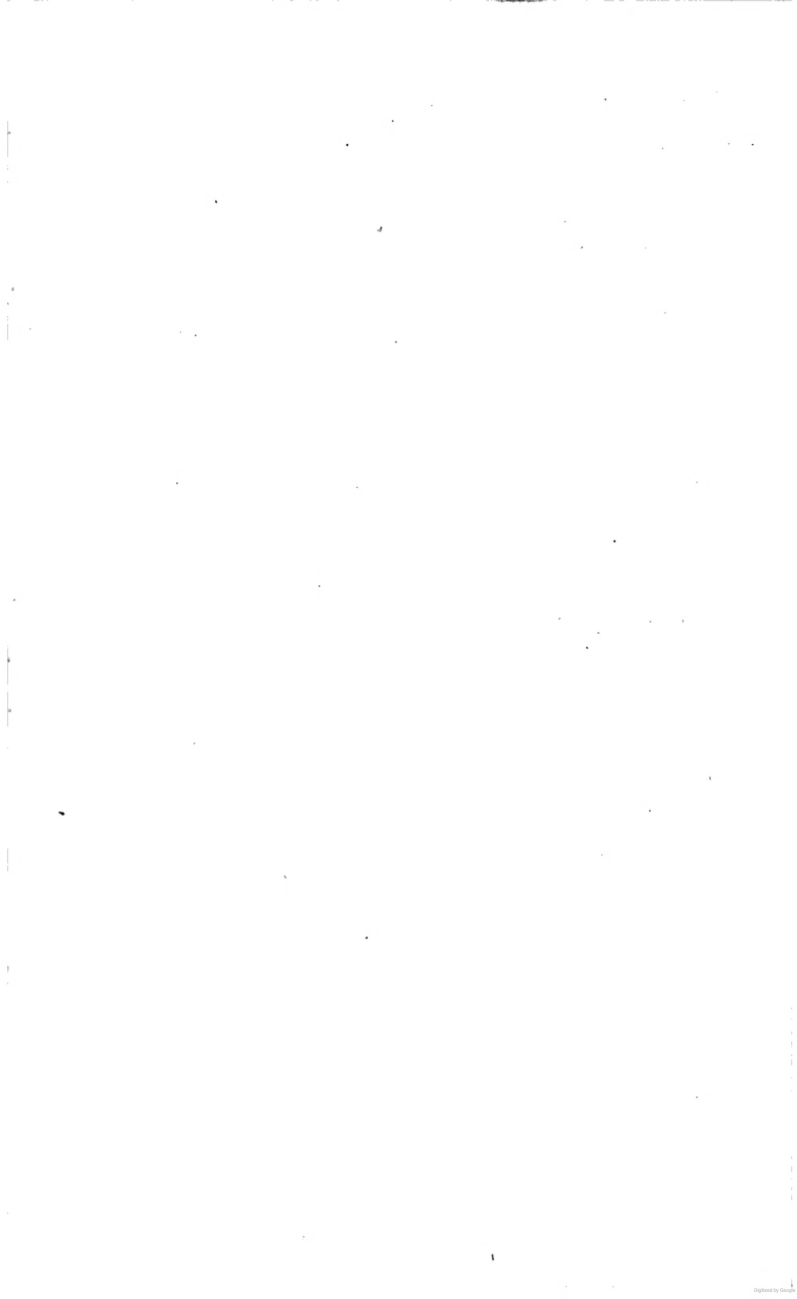
DIVISION IV. 16 Lectures.

Divinity	5 Lectures.
History of Romantic Fiction	1 Lecture.
Romance	2 Lectures.
Biography	2 Lectures.
History	2 Lectures.
Didactic, Rhetorical and Argumentative Com- positions	2 Lectures.
Periodical Literature	2 Lectures.

The Course will be concluded by two Lectures,—to which there will be free admission for all gentlemen who may have attended one or more of the above Divisions :

1. On the present State and Prospects of English Literature.
 2. On the Connection between Literature and Morals.
-

The Lectures on English Literature will be delivered at Half past Six in the Evening on Tuesdays and Thursdays until the close of the Session.





THE GALAXY

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A DISCOURSE

ON THE ADVANTAGES OF

NATURAL PHILOSOPHY AND ASTRONOMY,

AS PART OF A

GENERAL AND PROFESSIONAL EDUCATION.

BEING AN

Introductory Lecture

DELIVERED IN

THE UNIVERSITY OF LONDON,

ON THE 28TH OCTOBER, 1828,

BY

THE REV. DIONYSIUS LARDNER, LL.D. F.R.S. L. AND E.

PROFESSOR OF NATURAL PHILOSOPHY AND ASTRONOMY IN THE
UNIVERSITY OF LONDON, M.R.I.A. HONORARY FELLOW OF THE
CAMBRIDGE PHILOSOPHICAL SOCIETY, FELLOW OF THE
ASTRONOMICAL SOCIETY, HONORARY MEMBER OF
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ARTS IN SCOTLAND, &c.

LONDON.

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PREFACE.

THE following is the First of two introductory Lectures which were delivered on the opening of the School of Natural Philosophy in the University of London. Neither the favourable reception which this Discourse met with from an over-indulgent audience, nor even the unexpected demand for its repetition, would have induced the Author to venture its publication, had it not happened that numerous persons who were desirous to be present at its delivery, and who had obtained tickets of admission, were excluded, on both occasions, from want of room. As the Second Lecture was devoted to the exhibition of the splendid Apparatus which has been provided for this class, and to the explanation of its uses and advantages in the business of instruction, it is obviously a subject not suited for publication. It may not be improper, however, here to state a few particulars respecting it.

The Apparatus may be divided into four classes. The first comprises instruments of philosophical investigation,

such as Air-pumps, Balances, Electrical and Galvanic machines, and apparatus for experiments in all parts of physical science. Neither attention nor cost has been spared to provide these not only in number and variety, but also in magnitude and excellence, equal, if not superior, to any collection in these kingdoms.

The second class includes Working Models of machines, on a scale adapted for exhibition in a large theatre, to a class as numerous as that which may be expected in the University of London.

It often happens that an instrument of which the use and application are to be taught, is too delicate for the rough manipulation of the lecture-room, and even though it should be produced, its parts might be too minute to be shown advantageously to a class. This remark applies very generally to instruments of philosophical observation, but more especially to those used in the departments of Astronomy and Geodæsy. In these cases well executed Models in Wood have been prepared, in which all the usual adjustments and minuter parts are exhibited on a larger scale and of less delicate construction. Such models form the third class of apparatus.

The last class comprises, *Sectional Models*. The construction of these instruments is a subject to which Dr. Lardner has given considerable attention, and he hopes to prove that they are now brought to a state of perfection, which entitles them to be considered the most powerful instruments of instruction which modern times can boast.

In order to represent a machine in this way, it is only necessary so to transpose the different parts, that while their mechanical connection is preserved, they will be brought into the same plane. As the object is to explain the principle of the construction and operation of the machine, it is not necessary that the proportions should be rigidly observed in the model; and in many instances it will be absolutely necessary to depart from them. In this respect, the following rules may be observed. The smallest part whose action is to be explained, should be made sufficiently large to be visible in every part of the theatre or class-room, and the largest parts of the machine limited to that magnitude which will prevent them from becoming inconvenient and unwieldy. Subject to these conditions, the scale and proportions of the parts of the model are as nearly as possible the same with those of the machine. When an invisible agent, such as air, or steam, is engaged in a machine, it cannot of course be made to appear in the model; but the valves, pistons, or other parts of the machinery which it affects, are moved in the same manner by invisible threads or wires, so that every motion and change which takes place in the machine, also appears in the same manner and at the same moment in the model. Such instruments as these are, in machines, analogous to the dissection of the subject in anatomy, but they attain their end much more perfectly. Dissection can only exhibit the form and arrangement of the different parts, but does not exhibit their motion. These models more

resemble what the anatomist would obtain if he could remove the skin and integuments from the living body, and disclose the blood circulating, the heart and pulse beating, the lungs playing, and all the functions of life in full operation.

In cases where the instrument or machine which is to be explained, is not of sufficient importance to warrant the expense or bulk of a model, delineations on a large scale are provided. In such instances, two drawings generally are prepared; the one exhibiting a section of the instrument, adapted to explain its construction and operation; and the other conveying in perspective a representation of the arrangement of its parts.

The mathematical details of physical science are also represented on canvass, in characters sufficiently large to be observed from every part of the theatre; by which means, the most numerous class may be taught, and with as much ease and clearness as a single student.

University of London,
November, 1828.

INTRODUCTORY LECTURE.

GENTLEMEN,

THE department of the University, the opening of which you have this day honoured by your presence, embraces branches of public instruction which have ever held a prominent place in academical institutions. But there certainly never was a period at which they ought to stand so conspicuous as the present, because no preceding age has been so largely indebted to them for the luxuries and substantial comforts of civilized life; nor is there any country on the face of the globe which owes to them so much prosperity and power, as that which we inhabit. When we consider the extent of the sciences which fall within the province of this professorship—an extent which is only surpassed by the importance of those sciences, as branches of general as well as of professional education; when we contemplate the benefits which must spring from the successful establishment of a great school of Natural Philosophy in the most populous and wealthy city in the world—benefits affecting not the present race only, but unborn millions; it is impossible not to feel deeply and express strongly, the heavy responsibility which must attach to him whose practical duty it is to realize a design so noble. Under all these circumstances, I shall esteem myself fortunate indeed, if the quality of the instruction which shall be imparted in this Theatre, be found in any degree commensurate with the magnitude and importance of the subject, and with the splendour and even luxury of the apparatus and other accessories furnished by the munificence of the founders of this University.

Natural Philosophy is a general name, under which are comprised two principal species, Mechanical and Chemical Philosophy. Either because of the greater extent of the science, or the higher order of reasoning applied in it, the term "Natural Philosophy" is now used *par excellence*, synonymously with Mechanical Philosophy. The line which separates Mechanical and Chemical Philosophy is easily drawn. The phenomena contemplated in the former, always have reference, either directly or indirectly, to the arrangement, collocation, or juxta-position of bodies, or the parts of bodies with respect to each other, whether these bodies be placed upon the surface of the earth, and are subjects of immediate experiment, or are found in the abyss of space in which the earth itself rolls, and therefore, objects only of distant observation. The Chemical Philosopher, on the other hand, contemplates changes and effects which do not depend, or rather are not perceived to depend, on mere arrangement, or juxta-position of parts; changes which seem to affect the very nature of the bodies engaged, and in which some leading and essential qualities appear to be obliterated, and others called into existence. It is certain, that many of these phenomena arise from mechanical causes, and probable that all do so; but until they be demonstratively traced to such a source, they properly belong to the province of the chemist.

If two pieces of lead, or two plates of well-polished brass, be brought into close contact, they will adhere so strongly that the exertion of considerable force will be necessary to separate them. This is a mechanical phenomenon, manifested by the contiguity or contact of two solids. If, on the other hand, a piece of potassium be brought into contact with ice, flame is instantly produced: here is something very different from arrangement or collocation of parts. This phenomenon is chemical. Again in fluids: if oil be put into the same bottle with water, it will float at the top, the one liquid being yellow, the other colourless. If the bottle be shaken, the particles of the oil will

be simply intermingled with those of the water, and a faint yellow liquid will be produced, until the components again separate. This is a mechanical phenomenon. On the contrary, lime water and a solution of corrosive sublimate are both colourless fluids; but if they be mixed, an opaque brownish yellow liquid is produced; and if to this mixture some sulphuric acid be added, the opacity and colour will again disappear, and a transparent colourless liquid will be obtained. These are chemical phenomena.

In the one case, the sensible qualities of the components are found in the compound, modified and diluted. In fact, no other change ensues, than the diffusion of the particles of the one substance through and among those of the other. In the other case, the effects are wholly different. Leading sensible qualities of the components are obliterated; others of an entirely different character appear. The combination is therefore, in this case, said to be chemical; in the former, mechanical. Now, some are of opinion, that the sensible qualities of substances depend on the size and figure of their ultimate and elementary molecules. If this be true, it is possible, that by the coalition of the molecules of one substance with those of another, new molecules may be formed for the compound, differing in size and figure, and therefore producing different sensible qualities from those of the components. Were this conclusively established, and the figure of the molecules producing determinate effects upon the senses defined, the phenomena in question would at once be transferred from the Chemist to the Mechanical Philosopher; and, such must be the effect of the progress of knowledge. Mechanical Philosophy will constantly encroach on the territory of Chemistry; while Chemistry, on the other side, pushes her conquests into the *terra incognita* of Nature.

Mechanical Philosophy stands between Pure Mathematics and Chemistry. As a branch of general education, it possesses considerable advantages over each of these departments of science. Like Chemistry, it is based upon

facts established by accurate experiment and observation; but these facts, like mathematical axioms, are few in number, and simple in character. The superstructure raised upon them is strictly demonstrative; and consequently, in passing from a first principle or physical axiom, to the most remote or abstruse conclusion, we do not lose one grain of the certitude of the principle from which we departed. If that principle be certainly true, the inference which we deduce from it, however remote, must be equally so. This is an advantage which no science has, or can have, which does not admit of the application of mathematical reasoning:

Compared with Pure Mathematics, Natural Philosophy must be admitted to have less certainty, because the facts which it assumes as first principles, are of a more complex character, and not such frequent and obvious subjects of observation. But this inferior rigour is more speculative than real, and accordingly we find few, except Mathematicians, who can see the difference between the degrees of evidence of a mathematical and physical axiom. An example will make this apparent. That two magnitudes which exactly cover the same magnitude, would exactly cover each other, is a mathematical axiom. The certainty of this and similar truths is considered to be the highest of which our nature is susceptible. That the Sun which rose and set at London yesterday, and every preceding day within human record, will rise and set to-morrow; that Fire, which burned the hand of Mutius Scævola, would also under the same circumstances burn mine; are physical axioms. To institute a distinction between the degrees of certainty of such propositions, must seem to minds not imbued with scholastic habits, little better than quibbling.

In the present Lecture, Gentlemen, I propose to lay before you a brief outline of the subjects of instruction which have been appropriated to this Professorship, and to take a view of the advantages of these, first, as part of a liberal education; and secondly, as an essential element in

the education of those destined for particular professions. In the Lecture of to-morrow, I shall explain the order and method which will be adopted in teaching these sciences ; and shall more especially bring under your attention the instruments of illustration of which I intend to avail myself.* I shall anxiously seize that opportunity, to exhibit to the public some of the magnificent apparatus which has been provided for this class, to explain its use, and show its actual operation. Among these, I may more especially mention several beautiful working and sectional models of Steam-engines.

In Mechanical Science, several properties and forms of bodies are considered, and according to these forms and properties, the science is divided and arranged. The mutual action of solid bodies placed on the surface of the earth, is the first and most obvious subject which solicits our attention. The department of the science which is devoted to this investigation is commonly called Mechanics. On many accounts, this is one of the most important divisions of Physics. Solid bodies are generally the most convenient and effectual means of transmitting and modifying force, and are therefore the materials of which most machines are formed. They are also the most ready and efficient means of opposing passive resistance to incumbent pressure, and are therefore the materials of which structures are composed.

Besides this, the principles and properties developed in the examination of solid bodies on the surface of the earth, are by no means peculiar to those bodies, or to the situation in which they are placed. Many of them are laws and properties common to matter, whatever form it may assume, or in whatever situation it may be found. Under this division of Physics will be included the consideration of extension, divisibility, mass, density, porosity, inertia, attraction, weight, motion, and force. The ele-

* The subject of this second Lecture is, for obvious reasons, not suited for publication.

ments of Machinery, or, as they are called, the "Mechanic Powers," will be examined in considerable detail. Friction, and the resisting forces, the strength of materials, the force of animals, and other collateral topics, will be investigated. These will be the subjects of our first course.

In another course, the attention of the student will be directed to the properties of fluids, inelastic and elastic; that is, in the liquid and gaseous (or vaporous) states. These form the subjects of the divisions of physical science, which are commonly denominated Hydrostatics, Hydraulics, and Pneumatics.

Having developed the laws and principles which regulate the action of bodies on the surface of the earth, our views will next be directed to the heavens. The various appearances and phenomena there exhibited will be exactly defined, and the methods of observing them explained. Hence, by a chain of strict reasoning, the motions and magnitudes, which cause these appearances, will be detected. Such are the limits of Plane Astronomy.

Proceeding one step further, the peculiar laws of these motions will be explained, and the forces which regulate them discovered. And here, we shall have occasion to observe the perfect identity of these results with the laws previously found to prevail on the surface of the earth; plainly proving that the same hand which guides the fall of a rain-drop, also controls the planet in its path, governs the devious and eccentric evolution of the comet, and compels the gyration of the unwieldy orb of the Sun around the centre of the system. Such are the lofty contemplations of Physical Astronomy.

Connected with this, is the less sublime though not less useful problem, to determine the figure and dimensions of the various parts of the planet on which we live. Such have been the extent and accuracy to which modern Physics has attained, that this single problem has assumed the form of a separate science, under the name of *Geodasy*.

Vast as the subjects are, of which I have here attempted to sketch the outline, they constitute little more than half the extent of the science to be taught in this theatre. The agents engaged in these investigations, are all of a massive and ponderous character. Even the subject of Pneumatics, Air itself, is as impenetrable as adamant, and possesses the ponderous principle as essentially as lead. A far more subtle class of agents remains to be considered : agents which are denominated imponderable, because the most delicate tests have never detected in them either weight or inertia : such are Light, Heat, Electricity, and Magnetism.

Optics is the name generally applied to that division of Natural Philosophy which treats of the properties of Light. The use of this term would, however, be more correct, if its application were restricted to that part of the science which more immediately relates to the theory and phenomena of Vision. Sight is not only the most perfect, but also the most useful and pleasurable of the senses. It is the most perfect, because the impressions received through it are the most vivid and exact. It conveys to us ideas of light and colours, and through their means, the most distinct and accurate perceptions of form and figure, space, distance, and motion. It is the most useful, because it informs us of changes and events which happen in places where we are not present, and thus endows us with a degree of ubiquity. It is the most pleasurable not only because of the infinite variety of the ideas which it furnishes, and the wonderful richness of colours, for which it is the only avenue; but even *light* itself, exclusive of any of the objects which it renders visible, produces one of the most agreeable of all sensations. This is manifested by the eagerness with which the new-born infant directs its eyes to the quarter from whence light proceeds. Numerous instances have occurred of persons deprived from infancy of the sense of sight, whose greatest enjoyment was to gaze for hours at a light

so strong, as to excite a feeble sensation in their imperfect organs.*

If the consideration of Vision and its immediate objects be interesting, the astonishing mechanism by which art has improved that sense, already so perfect, and even supplied it where it has been refused by nature, is not less so. Who is so destitute of curiosity, so dead to every sense of admiration for the godlike results of human genius, as not to seek a knowledge of that science, which, usurping the functions of a miracle, restores sight to the blind; repairs, in the most important respect, the ravages of time; and if it raise not the dead, at least prolongs those enjoyments, without which life would become a burthen? To notice all the attractions presented by this most fascinating branch of physics would far exceed our present limits. I shall not, therefore, attempt to enumerate the wondrous powers which we receive from the telescope and the microscope. With the one, sweeping through regions of the universe, whose distances and magnitudes far transcend the power of imagination to conceive, and even baffle the power of number to express: with the other, penetrating the minute and secret recesses of nature, and beholding worlds of organized living beings in a single drop of liquid. Setting aside all these considerations, in which Vision is directly engaged, the results of modern investigations have given a new aspect to the science of Light, and the name Optics has now become altogether inadequate.

It is impossible to contemplate the recent discoveries respecting Light, without sentiments of admiration and astonishment: admiration at the gorgeous phenomena produced by its action upon the bodies on which it impinges and which it penetrates; at the infinite and apparently capricious varieties of which these appearances are susceptible; and, above all, at the simplicity and beauty of

* Mr. Herschell notices this circumstance in his *Treatise on Optics*.

the mechanical laws which govern this extraordinary fluid : astonishment at the sagacity which has threaded this labyrinth, which has disentangled this complexity, and which has discovered, amid apparent irregularity, all that harmony which would be immediately perceived in them by beings of a superior order.

The effects of these improvements in the theory of Light have not terminated in that science. They have spread their influence into Mineralogy. Polarized Light has given us new and infinitely refined perceptions of touch. We are enabled, with mathematical precision and with demonstrative certainty, to assign the exact form of atoms millions of times beyond microscopic power. We tremble upon the brink of discovering the elementary constitution of the material world. We can feel, as it were, the molecules of Light itself, the most subtle of all fluids ; we can almost perceive their sides and ends, and can actually control, regulate, and arrange the constituent parts of a sunbeam.

The nature and properties of Heat, a subject which stands between Natural Philosophy and Chemistry, is on the confines of both, and may be considered a sort of debatable land, or rather a common territory. Heat decides the form of a body, whether it be solid, liquid, or vaporous. It is also an essential element in the determination of magnitude, since a change of temperature is generally accompanied by a change of bulk. Heat partakes of several properties of Light ; it is refracted and reflected by analogous laws. It is the principal agent in the most important mechanical invention of this or any former age. On all these accounts, it is right that Heat, its nature, properties, applications, and uses, should hold a prominent place in a Course of Physics so complete and extensive as that which is designed to be taught in this University.

Electricity and Magnetism are the last subjects to which we propose to call the attention of the student. Although these branches of Natural Science have not yet



attained maturity, still great advances toward that state have been made. The genius and industry of modern philosophers have not only accumulated a vast quantity of experimental results, but have actually brought one of these most subtle agents under the dominion of Mathematics. Electricity must now be considered as a branch of Mixed Mathematics, exhibiting analytical investigations, the beauty and refinement of which give it a title to be placed in the same rank with Physical Astronomy. The experiments which indicate the mutual relation of Electricity and Galvanism to Magnetism, will be subjects of careful examination; and with a view to this, a most effective system of apparatus has been prepared.

Such, Gentlemen, is a brief outline of the sciences to be taught in this school. I shall now endeavour to show why some or all of the topics which I have enumerated ought to form an essential part of a general as well as a professional education; to prove the advantage of such information in every situation of social and civilized life; and to demonstrate its absolute necessity in certain professions, in which it has been hitherto rather considered an accomplishment than an essential.

What, let me ask, are the main objects of a liberal education? Are they not to train and discipline the thinking faculty, to nourish and strengthen the reasoning principle, to impart vigour and courage to invention, to raise the tone of all the higher energies of the intellect,—in a word, to render tough and brawny the thews and muscles of the mind? And what exercise is so well fitted to attain these great ends, as that which is furnished by the investigations which are found in every department of Physics? In the experimental inquiries here instituted, the student is placed, in a certain degree, under the dominion of circumstances: his judgment is called into action; in his arrangements selection is necessary; manual dexterity, quickness of observation, and skill in the adaptation

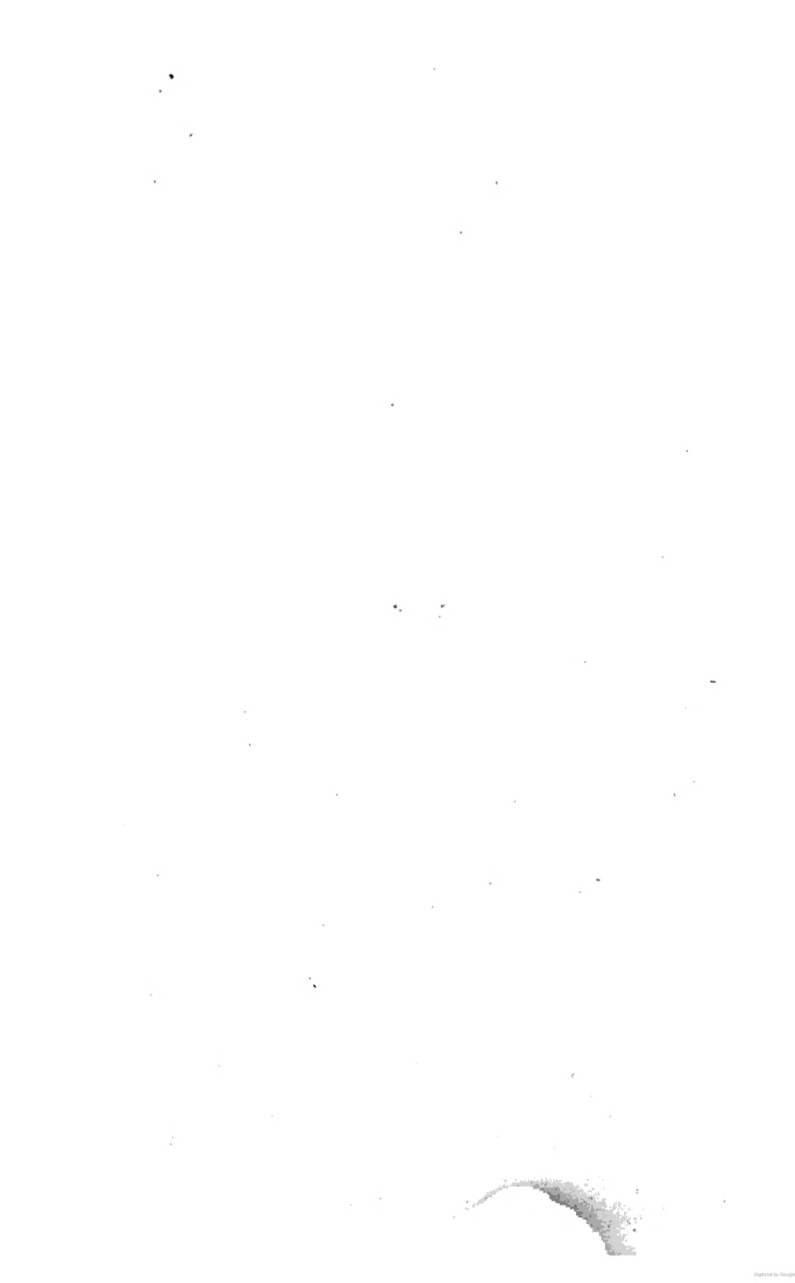
of means to an end, are all required and all exerted. The results, thus obtained, subsequently form the basis of a system of rigorously demonstrative reasoning, by which he is conducted with infallible certainty to remote and complicated truths. Habits of attention and accuracy never fail to arise out of this exercise; and, above all, the mind acquires skill to detect, and power to expose, a sophism, however ingenious the disguise, or plausible the form it may assume. Thus the discursive faculty is strengthened and sharpened, the judgment exercised and quickened, and that most valuable quality, common sense, never ceases to be engaged.

I shall perhaps be told, that although the objects to which I have just adverted include all those purposes of a liberal education which have direct and immediate utility, still that something more is necessary: that the mind, like the body, cannot be always in a state of full activity; that it must have its intervals of relaxation and repose; that subjects of elegant and pleasing meditation should be supplied to fill these intervals: and it will further be said, that the usage of elevated society demands grace and beauty of thought and expression, as imperiously as it exacts the same qualities in the external deportment of the body; that therefore it is an important part of a liberal education to store the mind with high contemplations, to inspire the soul with exalted sentiments, to fill the imagination with splendid associations, and to enrich the fancy with sublime imagery. These, I admit, are great and important objects, and, in certain stations and ranks, cannot and ought not to be dispensed with. The poets, historians, and orators of Greece and Rome, as well as those of a more modern era, the works of art in every age and country, have been studied with this view. Fertile sources these of the sublime and beautiful, and such as no one who values the estimation of the most refined and elegant society should overlook. But while I freely admit the sublimity of the classic volume, may I not be permitted

to say, that objects not less lofty will be found in the pages of the book of Nature? While I confess the beauty of the works of man, shall I not assert the majesty of the works of God? Will it be affirmed that the highest aspirations of a poet ever even approached in sublimity the scenery of the universe unveiled in modern Astronomy? — Spaces and magnitudes of infinite extent, motions and forms of surpassing beauty; order, and harmony, to which the most refined result of human art is a mere mockery. To form an adequate notion of the splendour and sublimity of the prospects which will be spread before your mind, in this part of physical science, much more time would be necessary than can now be given to the subject. But still some faint idea of them may be caught even by a glimpse of the Solar System, and the stellar wonders, of which it is only a part, and in the comparison with which it shrinks into a point. The Sun, a body of enormous magnitude, is a centre, round which eleven worlds, similar to our own, but several of them much larger, continually revolve. (Plate I.) These orbs have their days and their nights, their summers and their winters, their lands and their waters, their hills and their vallies, their atmospheres and their clouds; and those more removed from the solar beam have their moons, in ever-enduring revolution, attendant on them. Is it supposable that they have not also their myriads of living creatures? Have they not their intelligent beings, capable of perceiving the laws of the universe, and therefore at once manifesting and glorifying the power, the wisdom, and the goodness of the infinite and incomprehensible Centre of all Existence? Are these rolling worlds like ours in all things else, and yet inferior to ours in that? Or is it not probable, that they are the habitations of classes of creatures excelling us as far in intellectual power, as some of those planets exceed ours in magnitude and apparent importance.

But it is not these speculations alone, supported as they are by the strongest analogies, and replete with materials for





deep meditation, which fill us with admiration at divine skill. If we confine our views to those effects which are matter of certainty and not of speculation, we find ample scope for wonder. The worlds which compose the Solar System revolve in most complex and intricate paths, and are at first view subject to strange anomalies and irregularities; nevertheless, all these apparent discrepancies are resolved, after many ages, into the most beautiful regularities; for every deviation there is a subsequent compensation; and the smallest grain of sand does not move upon the surface of the earth without producing a corresponding effect in the remotest planet. Such are the wondrous laws which rule the universe,—laws which may truly be said to be the divine lineaments reflected from the bright surface of Creation.

If the contemplation of great magnitude fill the mind with sublime feelings, where else can such sources of those sentiments be found as are here offered? The Earth which we inhabit is but an insignificant part of the System. Yet its magnitude is so great, that it is by no means an easy task for the imagination to grasp it. Some notion may be formed of the largest mountain on the surface of the earth. But the earth itself is many thousand-million times this magnitude. If a pillar can be conceived whose base would cover a square mile, and whose height should be one mile, the bulk of such a pillar multiplied two hundred and fifty-thousand million of times, would be less than that of the Earth. And yet the Sun is nearly fourteen hundred thousand times the bulk of the Earth, and even several of the planets have some hundred times greater bulk.

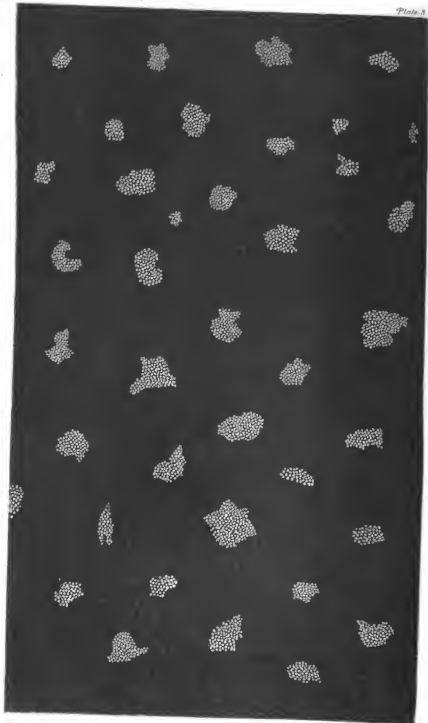
Nor are the Velocities and Distances of these bodies less surprising than their magnitudes. The Earth moves in its orbit with a speed sixty times greater than that of a musket ball, and is at such a distance from the Sun, that this ball would take nine years to move from the one to the other.

Without pursuing further the consideration of the subject of the Solar System, although it is far from being exhausted,

let us proceed to view that greater System of which our Sun with its attendant planets is only a constituent part. Viewing the firmament on a clear night, we behold numerous stars distinctly visible to the naked eye. We naturally inquire what are these? how are they placed with respect to our sun and planets? does any and what relation subsist among them? are they parts of the same system, or do they belong to different systems? We cannot here enter into the details of a discussion which would satisfy demonstratively these inquiries; but it may be sufficient to state, that the Sun itself is a *Star*, one of a group or cluster of many hundred millions; that those stars of this group which are nearest to us are distinctly perceptible to naked and unassisted vision. These, however, are but few. Telescopic aid discloses many thousands more. In some directions they are so thickly placed, that neither the eye nor yet the telescope can separate them, and the firmament seems as though it were spread over with a brilliant starry dust.

I have spoken of the Solar System, and the distances and magnitudes of the bodies of which it is composed. I must now bid you suppose this *System* to shrink into a point, that you may stretch your imagination to the large conception of the Cloud of Stars, to which I have called your attention. To express the distance even of the Stars nearest to our System, we are compelled to use no common unit. Light is known to move with the almost unimaginable velocity of two hundred thousand miles in a second, and yet it can be proved that Light cannot take less than three years, to come from some of the nearest Stars to our System. From some of the most remote Stars of our group, it could not arrive in less time than fifteen thousand years! What wonderful inferences may we not draw from these facts! These Stars, and therefore the part of the universe to which they belong, must have been at least fifteen thousand years in existence. Again, it is probable, that some stars, created many thousand years since, are not





NEBULAE

yet visible, the first beam of light which they emitted not having reached us !

This starry mass, in which we are placed, has the form of a layer or *stratum*, the thickness of which is small, compared with its length or breadth. When viewed in the direction of the plane of its length and breadth, the stars, through which the eye is directed, appear numerous as to give a general cloudy whitishness to every part of the heavens in the direction of this plane. This produces that silvery band or zone which surrounds the heavens, and which is called the *milky-way*. Viewed in other directions, the number of stars is not so considerable. A general notion of the shape of this *nebula* may be obtained from the representation of it given in Plate II.

To carry our survey of the universe one step further.—This group of so many hundred millions of *Suns* (for *Suns* with attendant planets they undoubtedly are), immense as it is, is itself but a speck in Creation. Innumerable other groups, many of which far surpass this of ours in magnitude, surround us on every side through illimitable space. (Plate III.) From several of these *nebulae* Light takes many millions of years to reach us. What notions do we not hence derive of the unbounded extent of Creation, not only in *space*, but in *time* !

When we refer to the era of our own creation, and compare the whole period from that time to the present, with the duration of one of these distant *nebulae*, how utterly insignificant appears the particle of the universe on which we are placed ; and how vain and foolish seem the records of the history of the human race ! The greatest events which absorb the attention of man in the council and in the field, the eloquence of the debate, and the clang of the battle, dwindle into insignificance even more contemptible than the prattle of childhood or the hum of an insect. But still we must not forget that we measure these relations in reference to our own faculties, and that there is a Being whose powers are not limited by space or time, and

who, while he contemplates the immensity of the universe, can, and does, keep constantly under his view, every the most trivial act of the most insignificant of his creatures.

Having considered Physical Science as an element of general education, I shall now view it in relation to particular professions.

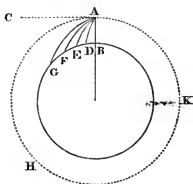
Among the various professions and avocations which the wants of man, natural and artificial, have called into existence, there are some in which an acquaintance with, at least, certain parts of Natural Philosophy, is pretty generally admitted to be essential; others in which it is rather considered as an acquisition to be desired, than a condition to be exacted, and others still in which it is never in any way looked for. Now, I shall endeavour to show, that in cases where its necessity is admitted, there is stronger reason for enforcing it than is generally supposed; that in many of the instances where it is only considered desirable, it should be rigorously exacted; and that in all cases where its absence is disregarded, its presence would be most useful.

A knowledge of the principles of Experimental Philosophy, has always been considered essential to Mechanics of every order and degree,—Engineers, civil, naval, and military,—Architects, and all who are engaged in arts and manufactures. It is hardly conceivable, that ignorance of the principles of Mechanical Science could for a moment be tolerated, much less defended, in any of those classes of persons. Nevertheless, it is certainly true, that even in this enlightened age, and still more in this country, the nursery of practical mechanics, those are to be found, who, without expressly denying the use of scientific knowledge to practical men, do indirectly discourage its cultivation. This is done by inveighing against what they call “theory,” and converting “theorist,” which, when rightly understood, is a title of honour, into a term of contempt; exactly in the same manner as the name “sophist” was

brought into disrepute by its misapplication and abuse in the schools.

Theory, Gentlemen, in the sense in which it is received in the modern method of philosophising, is a term seldom rightly interpreted, except by those who have had the benefit of a well-disciplined academical education, and by none is it more completely misunderstood, than by those who suppose it useless or injurious in the practical applications of science. The hypothetical systems of the ancients, indeed, well merited this reproach; but there can scarcely be a more gross manifestation of ignorance, than to attempt to fix such a stigma upon the Baconian Philosophy of our times.

In this system, Theory means nothing more than the grouping and classification of phenomena. As an instance, let us consider what is meant by the Theory of Gravitation. If a body placed at any point, A for in-



stance, above the surface of the Earth, be deprived of support, it is observed to descend in a straight line AB, perpendicular to the surface, and to continue so to move until its progress is obstructed by that surface. This single fact is a mechanical phenomenon. But further observation and experience assure us, that had the body A been at any other part of the earth, a like effect would, under the

same circumstances, have ensued. These effects are then grouped together and form a class of phenomena, or a "mechanical law." We learn, also, that the like effect is produced at all accessible heights above the surface, and depths below it; that it is not peculiar to the body A, but is a common property of all bodies near the surface. Thus the class is enlarged, the law is extended. We have supposed that the body A, has been simply disengaged and permitted to fall. But suppose, that at the moment when it is so disengaged, it should receive an impulse in the direction AC. The body A will now no longer move along AB, but will be observed to take the curved course AD. By mathematical reasoning this effect is shown to be nothing more than the necessary consequence, or rather the immediate combination, of the former motion AB, and the impulse AC. In proportion as the impulse AC is increased in force, so in the same proportion is the range AE, AF, AG, &c. increased. And although we are unable directly to produce the effect, yet we can compute with the greatest exactness the force of the impulse which (exclusive of the resistance of the air) would actually enable the body to sweep entirely round the earth in the circular orbit AHK, in which it would continue for ever to revolve. All these phenomena, apparently so different from the direct fall of the body A, are nevertheless brought under the same class, and the law is called "terrestrial gravity."

Having embraced within the law the phenomenon of a body revolving round the earth, our attention is obviously drawn to the motion of the Moon, which is precisely of the same kind. Close examination soon convinces us, that it is only another variety of the same class of phenomena, and accordingly we say, "the Moon is retained in her orbit by the gravitation of the earth."

Having proceeded thus far in the process of generalization, the great discoverer of the Law of Nature directed his view to the Solar System. There he beheld

several smaller bodies revolving in orbits round a greater central body, in exactly the same manner as the moon revolves round the earth. A presumption was immediately raised. The question was started, are these only further manifestations of the same law? Not contented, however, with taking the mere fact of the revolution round a central body as the basis of his classification, he considered it necessary to inquire into, and compare more particularly, the circumstances of the revolution. He computed from the Moon's motion in her orbit, the velocity with which a body placed where she is, would drop directly towards the surface of the earth. Upon comparing this with the velocity with which a body falls at the surface, he found a very remarkable relation, viz., that the velocity of the body at the surface, is as many times greater than the velocity of the body falling from the Moon's orbit, as the square of the distance of the Moon from the centre of the earth is, than the square of the distance from the body at the earth's surface to the centre. Here then was a test, a standard of comparison, a touchstone which must instantly betray the identity of the phenomena in question. Newton therefore proceeded to examine the planetary motions; and found, to his infinite pleasure, *that the velocity with which a body would drop from any planet to the Sun, was increased exactly in the same proportion as the square of the planet's distance from the Sun is diminished.* It is scarcely necessary to add, that the same law was found to prevail among the satellites, with relation to the several planets on which they attend.

Such is the THEORY of Gravitation, and let those who rail against theory examine it, and say whether they find any thing hypothetical, ANY THING NOT PRACTICAL in it. Similar EFFECTS (we inquire not of causes) are grouped and classified exactly in the same manner, as similar organised beings in Natural History; but this classification is attended with consequences of infinitely higher importance. To this generalization it is, that knowledge

owes all its value. Without it our information would be reduced to scattered and unconnected facts, which, like separate filaments, would be utterly destitute of strength. If knowledge be power, it is because its threads are bound and twisted together in general theorems. And Theory, so far from being inconsistent with practice, is practice itself, and that in the most extensive meaning of the term. The theorist differs, it is true, from the practical man; for the one is conversant with facts collectively, the other individually. The one is a wholesale dealer in experience, the other only retails it.

Among the professions in which an acquaintance with Natural Philosophy has been viewed rather as an accomplishment than an essential, one of the first which claims our notice is the Medical. In the systems of education promulged by those who have been invested by the Legislature with authority to control and direct the preliminary studies of certain classes of medical practitioners, and to appoint the qualifications necessary to entitle them to be permitted to superintend the treatment and cure of the derangements of the human body, *we find no mention of physical Science.** I shall not inquire from what cause this strange omission has arisen. An intelligent observer would infer that it proceeds from the assumption that no student could possibly overlook a qualification so obvious, and that it was omitted for the same reason that, in the catalogue of crimes denounced by the ancient laws, parricide was passed over as being an impossible act. Be the cause of the omission, however, what it may, it cannot be denied that the effect is injurious to the respectability of the profession, and must often be fatal to persons falling under the hands of those practitioners, who have not voluntarily acquired that which the competent authorities should compel them to know.

* Of course none of these or the following observations are intended to be applied to those Universities which require a degree in arts as a preliminary to the medical degrees.

I believe, Gentlemen, I am justified in asserting, that such an error as this is without a parallel in any system of professional education ; for, if there be one avocation which more than another demands a knowledge of the laws and phenomena of Mechanical Science, with which all its laws, in all its branches, are intimately connected, and in which they are practically applied, it is that art which has for its object to maintain in constant repair the most wonderful and most perfect of all machines,—the Human Body. Physical Science, Gentlemen, is the corner-stone of the arts of Medicine and Surgery. There is not a department of it, not an element, not a law, not a phenomenon, which does not find a practical illustration in the structure and functions of the Living Animal.

I should be going too far in the sacrifice of truth to courtesy, were I not here, in the capacity of a public teacher, and placed as I am under a serious responsibility, to lift my voice against this defect of the system of Medical Education in these countries. I do assert boldly, and will maintain confidently, that *this system is, and must continue to be insufficient, until the Elements of physics constitute an integral, essential, and indispensable part of it.* In this opinion I am happy to say, that I am confirmed by my medical colleagues, and by none more strenuously than by that eminent physiologist* who addressed you on the opening of the Medical School. And here, Gentlemen, I ought to acknowledge, that although Physical Science *be* rejected by the public authorities, as a condition of admission to practice, yet there are numerous and respectable practitioners who have cultivated it very extensively. But if they have made that valuable acquisition, if they have elevated themselves in their own estimation, and in that of society, by raising their knowledge more near to the level of their high profession, to whom are they indebted for that distinction? Do they owe it to the good discipline

* Charles Bell, Esq.

of their early education, or to the excellent rules and institutions of the privileged school from which they have obtained their diploma? Or is it not rather due to their own judgment in perceiving the inconsistency, and perhaps to their own conscience in feeling the dishonesty, of practising an art without learning its principles?

I have said, Gentlemen, that the science of Physiology rests upon that of Physics as its foundation, and not on one part only of Physics, but on each and every of its subordinate branches. Let us now see how far facts will bear me out in this assertion. I shall begin with the skeleton. Here is a *Machine* in the strictest sense of the term. Every part is adapted to transmit certain motions and forces to other parts properly formed to receive and modify them. Levers, hinges, and joints are fitly arranged, some to sustain pressure, others to transmit active force; some having a limited range of action, others having a larger sweep, and greater velocity; some capable of moving in one direction only, others capable of moving in all directions, and furnished with an universal joint. Still more conspicuous are the perfection and beauty of this machine, were we to consider it in reference to the adaptation of its various parts to the ends they are destined to attain. Limited as I am on the present occasion, it would be quite vain to attempt to descend to further particulars. I trust, however, ere long, to make this exquisite structure not the subject of one, but of several mechanical lectures. It may, nevertheless, be proper to observe, that it is not merely in the form, arrangement, and connection of the Bones that mechanical principles are illustrated and applied. The internal structure and arrangement of the material of these parts present the most remarkable exemplification of mechanical laws.

In cases of derangement or dislocation, the problem presented is, to determine the best method of adjustment: where and how a force may be applied with the greatest mechanical advantage, and with the least risk of injury?

In such a case machines are to be selected or invented for the due application of the force ; and even though such instruments should be obvious, the use of them may be attended with disastrous results, if attention be not given to their mechanical effects. A pulley might be used, which by a very slight application of manual force would tear off a limb. The want of mechanical knowledge in the surgeon, cannot be defended by saying that he may resort to the engineer ; unless the engineer be also an anatomist, he cannot assist him : to contrive the machine, it is necessary to know minutely the structure, form, and strength of the parts to which it is to be applied, as well as the exact quantity of motion or force which must be produced. But, indeed, the necessity of mechanical knowledge in the selection, invention, construction, and use of surgical instruments, and in all surgical operations and inquiries, is so very obvious, that it is almost an insult to your understandings to dwell upon the subject ; and it is lamentable to think that even an allusion to it should be called for at this time and in this place.

If the mere skeleton exhibit such multifarious illustrations of physical principles, what shall we say, when the sinews, tendons, muscles, nerves, veins, arteries, integuments, skin, and all the concomitant apparatus of the organized body are added ? The mere skeleton is a machine, it is true, but it is one, whose properties and functions are explicable on the statical and dynamical principles of what is technically called an *invariable* system, the most simple form in which bodies can be mechanically considered. The sinews, tendons, muscles, and nerves, on the other hand, are *variable* systems, require the application of different reasoning, and fall under a different branch of the science. Partial rigidity, imperfect flexibility, tension, contraction, and elasticity, are here to be considered. It is in the last degree absurd, to suppose that we can have any distinct ideas of the powers and the action of those parts of the body, without having at least a

general acquaintance with that part of Physics which treats of the forces which I have just mentioned. It would seem almost an offence against the common sense of my hearers, were I to insist on proving that the action of the vascular system involves *hydrodynamical* principles; that the organs of respiration are *pneumatical*; that the oral and vocal organs are constructed on the principles of *acoustics*; that the principles on which the structure of the eye depends, cannot be intelligible without learning *optics*; that *capillary attraction* determines, in a great degree, the functions of all the pores, and of those delicate tubes called hairs. In fact, Gentlemen, it is impossible to look for a moment at the animal body, or any part of it, without observing the illustration of some scientific principle: every joint is a physical theorem, and every limb is a volume of mechanical philosophy.

Impressed as I am with a deep conviction of the importance of this subject, I would appeal to the good sense of those highly gifted men who hold the reins of medical education in this great metropolis, and not to them alone, but to those not less distinguished persons who exert the same control in Scotland and in Ireland. I would adjure them, by the high nature of their profession,—a profession which is raised still higher by their own talents and attainments,—I would implore them to efface from its most humble follower the stigma of ignorance. I would bid them behold the medical schools of France, of Holland, of Italy, and other not less eminent institutions of Europe, where Physics are acknowledged to be as indispensable to the medical student as Anatomy itself; I would bid them not behold alone, but imitate. Let all who seek any licence or diploma, have received at least the elements of liberal knowledge. Such an improvement is demanded by the spirit of the age, and in this country, thank heaven! that spirit will not, and cannot be resisted.

Gentlemen, it is proper here to notice two objections which have been urged against considering the human

body as a machine. Although these objections come from very different classes of persons, and are insisted on from very different views and motives, yet both originate in the same misconception, and are refuted by the same argument. One of the objections to which I allude, originates among Physiologists, some of whom misapply those laws which are called the laws of life, or vital principles: by this abuse those laws become strictly what, in the hypothetical system of philosophizing, were called *occult causes*. These persons conceive, that the solids and fluids composing the living organized body are not, like all other solids and fluids, amenable to the established mechanical principles; in fact, they would have us suppose that matter, when organized and endowed with the living principle, changes its nature, loses its properties, and ceases to be itself.

The other objection to which I have referred, comes from some who, actuated by a most praiseworthy zeal to support the purity and spirituality of religion, are apprehensive that if the application of mechanical reasoning respecting the human body be once admitted; it will end in an attempt to trace *life* itself to Mechanism, to destroy the cheering prospects and annul the virtue-breathing precepts of Revelation, and substitute in its place a gloomy and heartless Materialism.

To all these objectors, of whichever class, I make one and the same answer,—“study Mechanical Science.” The superficial physiologist will there learn how unphilosophical it is to assume, that matter in different arrangements obeys different and inconsistent laws, and he will become convinced that such an hypothesis is as untenable as it is unnecessary. The zealous professor of a pure religion will be taught, that so far from mechanical reasoning having a tendency to prove that the body derives the principle of life from its own mechanism, all the analogies take a diametrically opposite direction, and demonstratively establish the impossibility of such a phenomenon.

That you may not receive this assurance merely as

a dictum, let us consider what constitutes a Machine, whence it derives its virtue, and what are its objects? A machine is a combination of parts composed of material substances, solid or fluid, or both, as the case may be, having certain definite forms and arrangements, and possessing certain capabilities of transmitting force or motion. Its objects are to move, press, sustain, combine, divide, or otherwise modify, those substances to which it is applied. But the machine itself, merely as such, cannot accomplish this. It possesses not its own principle of motion; it cannot urge its own levers, or stretch its own cords, or turn its own wheels, or put its own fluids into circulation. The application of some efficient cause extrinsic to, and altogether distinct from the machine itself, is necessary to accomplish this. This extrinsic cause, whatever it be, from which the machine derives its motion and efficacy, is called the *prime mover*. The point on which I desire now to fix your attention is, that this prime mover is altogether distinct from, and independent of, the machine; that it possesses, or at least may possess, no property in common with it, and that its existence or non-existence is not decided by the existence or non-existence of the machine. The machine may be broken, destroyed, worn by age, or otherwise disabled, and yet the prime mover may still retain its original energy. Thus a steam-engine is moved by fire, a mill by wind or water: the steam-engine may deteriorate by age, and the mill be broken to pieces by accident, and yet the fire, and the wind, and the water, will still preserve their powers. Now, Gentlemen, these observations, which I think correctly describe a Machine, may, *mutatis mutandis*, be applied to the Human Body. This body is also "a combination of parts composed of material substances, solid and fluid, having certain definite forms and arrangement, possessing certain capabilities of motion and force," destined and admirably adapted to obey the dictation of its Prime Mover, the living principle, the immaterial spirit. So long as it pleases the great En-

gineer who constructed this body, to permit its connection with that intellectual spirit, so long will it obey the impulses which it receives; nor does the decay of this Bodily Machine infer any corresponding decay in the moving Spirit, any more than the wear and tear of a Steam-engine proves the destruction of the principle of Heat which gives it motion. Neither are we to infer, because this Bodily Machine in its obedience to the Vital Spirit acts mechanically, and follows all the ordinary properties and laws of Matter, that, therefore, the Spirit which moves it partakes of the nature of Matter, or is amenable to its laws, any more than we should infer that the levers, wheels, pumps, chains, cords, and valves of a Steam-engine are regulated by the laws which govern Heat. On the contrary, I submit it to the candour of the most sceptical materialist, whether the whole tendency of analogy does not directly overthrow the hypothesis that the principle of life is organic. We are told in *THAT BOOK*,* of which both Christian and Jew equally acknowledge the authority, however they may otherwise differ, that, in the first instance, "God formed man of the dust of the ground;" that is to say, he created that curious and beautiful machine, the organized Human Body—but that body was still an inert structure without the principle of motion or spontaneity; a more noble work remained to be performed, the immaterial spirit, the divine essence, *the prime mover* of this machine was to be applied, and accordingly we learn that God "breathed into his nostrils the breath of life," and then, and not till then, "MAN BECAME A LIVING SOUL."

The province of the Physiologist, connected with Mechanical Science, seems to be sufficiently definite. He will first learn the physical laws which regulate the changes

* This appeal to Scripture is made, not of course to refute the sceptic who rejects it, but to show the believer that all which has been urged is consistent with it.

incident to matter, in the various forms which it may assume, and situations in which it may be found; he will acquire an exact knowledge of the various forces of Attraction, Affinity, Aggregation, Repulsion, or the classification of effects by whatever name it may be expressed. With patient accuracy, unbiassed by prejudice, and uninfluenced by preconceived hypotheses, he will observe the phenomena exhibited in the Human Body, and compare them with the established laws of Physics. He will refer each phenomenon to its proper class, or, as the phrase is, account for it. In such an investigation many appearances ought to be expected, which will seem at first, and perhaps for a very long period, anomalous. Such phenomena must be held *sub judice*, and reserved for more careful examination and more mature reflection, until some link be discovered which connects them with a known law, or until they exhibit some characters by which they may themselves be grouped into new classes. But we must not deceive ourselves, and fancy that we have terminated the inquiry, when we have given, to what we cannot comprehend, the title of “Laws of Life.”

There is one inducement to the study of Animal Physics, which should urge the Natural Philosopher to study Physiology, as strongly as it must tempt the Physiologist to become acquainted with Mechanical Philosophy. It has been suggested by an eminent French Mathematician,* that a view of the Animal Organization, in reference to the physical laws by which it is regulated, would be the most sure and successful means of improving and extending Mechanical Science, and that an abundant harvest of honourable fame awaits him who combines the different kinds of knowledge requisite to accomplish this. The same idea has, with his usual felicity and success, been expressed by the enlightened author of “Animal Mechanics.” To insist upon the value of this suggestion is superfluous, if we only look back to past inventions and

* Biot.

discoveries, and compare them with what we already know of the animal structure. Had the Eye been carefully studied, it could not have failed to lead directly to the discovery of achromatic lenses, for it is itself a most perfect achromatic instrument, and it owes that quality to the same principle which gives perfection to the telescope. The same organ would readily have suggested the means of removing or diminishing spherical aberrations; and without a great stretch of mind would have pointed out the Periscopic Glasses invented by Dr. Wollaston.* May we not reasonably look forward to further successful results from the examination of the eyes of all species of animals? The vocal and oral organs may furnish vast improvements in Acoustics. The Galvanic effect produced by certain animals may, when duly attended to, add further force to that already powerful agent. A view of the Animal Creation furnishes such subjects without end, and why should it astonish us that the most certain and effectual means of improving our own skill should be, to imitate the works of Him whose hand cannot err?

It would be quite vain, within the limits of this lecture, to attempt any further details on the mutual connection of Physiology and Physics. For the present, I venture to recommend, not to medical men only, but to all my auditors, the perusal of that most eloquent and philosophical tract published by the Society for the Diffusion of Knowledge, and entitled "Animal Mechanics;" an essay which no one can read without becoming a wiser, and what is more, a better man.

Having trespassed already so largely on your indulgence, I shall only allude to the advantages of the knowledge of this science in the Council, in the Senate, at the Bar, and in the Pulpit. In these professions, it is not

* Although the neglect of the natural aids to the improvement of science may have retarded the progress of knowledge, yet it enhances the merit of inventors, by having increased the difficulties of discovery.

merely as an element of liberal knowledge that its benefits will be felt. Questions will be started, measures proposed, and discussions raised, in which ignorance of the elements of Physics will lead to the greatest difficulties and embarrassments. In a country like this, which owes its place in the scale of nations, in so great a degree, to its arts and manufactures, how often will the statesman and the senator have to decide on measures, the policy of which must depend on the principles of this science—measures in which the social existence of millions may be involved? In such a country, how often is the advocate called upon to plead a cause in which the property and subsistence of his client hinges upon a mechanical question? And in any country when infidelity erects her crest, and levels her fury against religion, what more ample shield can the minister of God spread over the altar, than that which reflects the splendour of God's own works.

THE END.

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AN

INTRODUCTORY LECTURE

DELIVERED IN

THE UNIVERSITY OF LONDON,

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BY

LUDWIG VON MÜHLENFELS, LL.D.

PROFESSOR OF THE GERMAN AND NORTHERN LANGUAGES AND LITERATURE.

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INTRODUCTORY LECTURE.

GENTLEMEN,

IF the greater part of the Professors, who have delivered Introductory Lectures at this new Institution, have expressed the embarrassment which they felt in addressing a numerous assembly,—if many of them at the commencement of their address have thought it necessary to bespeak the indulgence of their auditory,—then, Gentlemen, how great must be my anxiety on the present occasion, feeling as I do the utter absence, in my case, of those encouraging circumstances which must have so essentially supported the learned individuals in question. Were I to consider only the wide difference between their situation and my own, I should indeed feel overwhelmed. They relied upon a reputation gained by previous exertions in the service of the public,—while I have to solicit an opportunity for making such exertions. They relied upon the esteem already gained,—I have only the hope and wish to merit it. They could calculate on a willing attention to eloquent discourses, expressively pronounced,—while I have to fear lest I may fatigue my hearers by an address which, however well intentioned, may be imperfectly conveyed and delivered. But, Gentlemen, there are two considerations which have enabled me to surmount, if not the embarrassment attending my peculiar position, at least the reluctance which I may have felt to introduce myself to the British public. Firstly,—the confidence of the founders of this Institution, in appointing me to the Chair of German and Northern Lan-

guages and Literature, induced me to hope that, from regard to those distinguished men, the assembly, which I should have to address, would not be unfavourably disposed towards me, but would, with them, indulge the belief that I might not altogether disappoint the expectations created by my elevation to the Chair. Secondly, —my own experience had taught me that Englishmen are ever disposed to make due allowance for the want of fluency and just pronunciation evinced by a foreigner when speaking their language, even though he may have resided a considerable time among them: and I trusted that those whom I should have the honour to address, would extend such indulgence in particular to one, whose short residence in England has not enabled him to conquer the deficiency alluded to. It is for you, Gentlemen, to decide, whether these considerations are sufficient to justify me in appearing before you this day; and as they alone have emboldened me thus publicly to address you, I throw myself on your generosity for that patient and indulgent attention, so necessary to every one addressing an assembly under similar circumstances.

It has been deemed advisable to defer the Lectures on German Literature, as also those on the Northern Languages and Literature, until next January, when the plan upon which it is proposed to conduct them will be duly detailed. On the present occasion, therefore, I must confine myself to the German Language, of which the class will commence immediately; and I have to solicit your attention to a few remarks upon this subject.

The German language, in which it will be my duty to instruct you, may be traced to those dark times which are veiled from the eye of history; and however much may have been done by modern German, Scandinavian, and English scholars, towards dispelling the mist which overhangs the origin of this language, still the precise degree of relation between it and the old Northern languages has not hitherto been clearly ascertained. This, however, seems

certain: that those languages have all, more or less distantly, sprung from one parent stock, of which no literary relics now remain. For the German language, the Gothic Translation of the Gospel by Ulfilas is received as the visible source ; but that for the Northern languages is found in the Runic monuments of Scandinavia, and in those ancient relics preserved by the Icelanders in their distant island. Though in the Gothic translation of the Bible the marks of the old Saxon and Scandinavian tongues are distinctly visible if the words in these languages be traced to their primitive roots, yet the close connection with the Upper German idiom predominates ; and the philologist, who wishes to describe the course taken by the German language, must revert to the venerable monument of Bishop Ulfilas.

The Scandinavian tongues have no authority equally ancient ; their earliest historical monuments, the Runics, being traceable only to the ninth or tenth century. But it should be remembered, that literary relics are not the *sole* admissible and decisive evidence of antiquity in a language. The language now spoken in Iceland, and in which such extensive stores of literature from the twelfth and thirteenth centuries still remain, is proved by historical investigation, and by the language of the old Scandinavian laws, to have been that of the North previously to the introduction of Christianity. We have no ground for supposing that any migration into Scandinavia took place after that of Odin, which happened about the commencement of the Christian era, if we except one of a small Gothic tribe of *Heruli*, mentioned by Procopius ; and consequently, the language could not have been materially altered by new settlers : nor did those Goths and Northmen, who founded empires abroad and changed their language, exercise any considerable influence on that of their native country. If, in addition to all this, we reflect that the language itself bears no marks of any such influence having been exercised thereon,—surely the conclusion is fully justified, that the Icelandic language, in its present state, may be regarded as

that which, of all the modern tongues, has least altered from its primitive form. In the northern countries, Sweden, Norway, and Denmark, by the introduction of Christianity, by the operation of foreign missionaries, and by the growing intercourse with Germany and England, the old Northern language lost much of its original character, which it preserved unaltered only in Iceland,—a country, by its remote position, out of the sphere of most of these influences. The Swedish language gradually became much altered, particularly during the *Calmar Union*, and more recently during the *Thirty Years' War*, which placed it in constant intercourse with German language and cultivation ;—a remark even more applicable to the Danish, in which the vestiges of the Low Saxon language are still distinctly visible.

This slight and very cursory notice of the Northern languages would not have been here introduced, but for their close connection with the German and English. On the similarity in spirit and in the structure of words between these two last-mentioned languages and the Northern, I shall have frequent occasion to remark in the course of instruction to be given to you on the German Language. As, however, our chief object to-day is to consider the general progress of this language, we will, if you please, revert to the point from which I have digressed ; namely, that the German language has developed itself from the old Gothic, as found in the Gospel of Ulfilas. Its first division was into the *Upper* and *Lower* German idioms : but the period at which this division commenced cannot now be ascertained with historical precision. During the interval which elapsed from the translation of the Gospel by Ulfilas, at the close of the fourth century, till the time of Clovis the first Christian king of the Franks, that is till the end of the fifth century, all the German tribes were in continual movement : but at this latter period we find the East Franks, the Allemands and Bavarians, settled in the South of Germany, and the Saxons and Frieses in the North.—By the oldest historical fragments from this time to the age of Charlemagne, that

is to the beginning of the ninth century, the division already alluded to, of the Upper and Lower German idioms, is placed beyond all doubt. The Franks formed their dialect, which was the transition to the Suabian, from the Gothic of Ulfilas, and gave it the prevalence among the nations in the South of Germany : but in France the German tones lost their ascendancy, and subsided into the Roman, from which the French language was gradually formed.

The old Saxon idiom, which by the migration of the Anglo-Saxons and Goths, or Juts, was carried to England in the middle of the fifth century, still continued prevalent in North Germany, branching into various dialects, of which the Friesian was the earlier, the Dutch the more recent formation. This prevalence it maintained even after the subjugation of the Saxons by Charlemagne, and continued down to the period of the Reformation, not only as the conversational language, but also that in which several valuable literary works, in prose and verse, were written, many of which, from the middle ages, are still preserved. At the Reformation it gave way to the High German for the purposes of literary composition and the conversation of the higher classes, though to this day it continues the dialect of the people, known by the name of the Low German.

The Upper German idiom, from which valuable literary relics yet remain, branched into the Allemandian, Bavarian, and Frankonian dialects, which last settled as the principal or court dialect, and so continued to the time of the Suabian emperors in the twelfth century. The Minnesingers, who flourished in the twelfth and in the first half of the thirteenth century, gave the ascendancy to the Allemandian or Suabian dialect in the South of Germany, where it became the court dialect, and received considerable cultivation, being employed in poetry even by emperors and kings. In the Minnesongs we see that melody and copiousness were the chief characteristics of this dialect, which continued in force after the Minnesong had dwindled into the Meistersong ; but gradually became amalgamated with the other dialects of

Upper Germany. This compounded idiom continued to be the literary language in South Germany till the Reformation, when it gave rise to the High German, and at present, like the Low German, merely survives as a provincial dialect.

In contemplating the gradual development of the two chief branches of the German language, as far as historical documents will permit, we observe them from century to century assuming each its distinct and peculiar character. During the middle ages the confusion of these two idioms were such, that even the learned Jacob Grimm will not venture to decide if Heinrich von Veldek, one of the oldest Minnesingers, wrote in the Upper or Lower German idiom; while at the present day these two differ so widely, that I question much whether a Suabian or Swiss peasant would understand his countrymen of Mecklenburgh, or Ost Friesland. Both languages having ceased to be used in literary composition, can now occupy only the attention of the philosophical linguist or general historian; but to these they present matter for much interesting investigation. And here I may observe, that it were well if the higher classes looked with somewhat less contempt upon the popular dialects, since in them we find the true features of the national character more strongly marked, the simplicity of morals and customs more faithfully portrayed, the inexhaustible humour of the people (of which their superiors know so little,) more perfectly expressed,—than in the polished conversational language of the elevated and the learned. The popular idiom of Low Germany is soft, broad, and somewhat drawling, unsuited to metaphor, but simple, homely and powerful, expressing clearly the predominance of the intellect over the fancy. The weak consonants *b* and *d* generally prevail; hissing sounds are avoided, while on the other hand, we frequently meet with lisping sounds. It is for the most part rather adapted to the expression of naïve and simple wit than of poetry. The Upper German idiom, on the contrary, is sharp in its tones, fluent, ener-

getic, and metaphorical ; but sonorous *only* when sung. The hard consonants *t* and *p*, with hissing sounds, prevail in it ; but it is more melodious in the use of vowels, especially in terminations, using the *a* more frequently than the *e*. If the Lower German dialect may be called the expression of gravity and sober reason, the Suabian may be termed the voice of cheerfulness and poetry. Thus the North of Germany has produced the profoundest thinkers and scholars—the South, the most distinguished poets. The popular idioms, expressing as it were the ground colour of national character, are not without great influence on the language of the higher classes ; and we find that in the North of Germany, the high German language, now in general use among the polite and literary circles, is pronounced in a soft, and frequently affected manner ; while in the South, the pronunciation is harsh and hissing,—a fault from which even their scholars are not always free. It should, however, be remembered, that the South Germans never commit such unpardonable faults against syntactical rules as their countrymen of the North.

The literary or High German language, which is that in general use among the polite and educated, had, indeed, formed itself in its rudiments before the time of Luther in Upper Saxony, a central point where the North and South German idioms meet and mingle ; and books were printed in a language which, though consisting principally of the Upper idiom, greatly resembled the modern literary language. Luther chose the Upper German idiom, as he found it modified in those printed books and spoken in central Germany, for the foundation, on which he reared the superstructure of the High German language. Though it is true that not Luther alone induced the adoption of this language, yet the skill with which he treated it, and the improvements which he made in it by his deep study of its nature and properties, must entitle him to the praise of having been the chief instrument in its establishment. In a spirit similar to that in which he commenced and com-

pleted the great work of religious reformation—for which he found the German people prepared—he undertook to rear the structure of their language : and thus we see, in the simultaneous progress of these two undertakings, a confirmation of the truth,—that language keeps pace with mental cultivation.

The principal dialects growing out of the two great idioms of Germany had long been indiscriminately adopted for composition. The golden age of the Suabian dialect had vanished in the thirteenth century with the dying tones of the Minnesongs ; and during the centuries immediately succeeding, every author wrote in his own provincial dialect ; not purely, but mixing it with others : and in some of their works we find the Austrian, Bavarian, and Alsatian dialects, heaped together in a most motley confusion. The same was also the case in the North of Germany, where every province lent its dialect to the writer. But the general character of the people and the growing influence of reason, pervading all parts of Germany, rendered a general expression necessary,—and this necessity was supplied by Luther. He chose a language which combines the elements of the two great German idioms, though the *Upper* is prevailing ; and this language has become the representative, not of any particular provincial character, but of that of the whole nation.—How admirably he treated this language—how deeply he studied its spirit and grammatical structure—how surprising were the progresses to which he led it,—you will find by a comparison of his earlier with his later writings, when you are enabled to peruse the works of this great genius. This is not the proper time for entering on a critical investigation of his character as an author ; but thus much I may say on the present occasion, that the writings of Luther appear to be less known and esteemed in England than they deserve. His depth of thought, the dialectical force of his reasoning, the bold simplicity of his prosaic style, and the divine inspiration of his spiritual songs, all evince his wonderful genius as the

Champion of Truth, his lofty character as a man, and the imperturbable serenity of a Christian mind which has found its centre in God. The language in which Luther commenced and carried on the Reformation, gained its ascendancy within a term of about thirty years. His Translation of the Bible, which has stood the test of three centuries, and baffled all attempts to supplant it,—as I trust it will continue still to do,—spread throughout Germany; and, together with the numerous other writings of Luther, succeeded in expelling the different dialects from the pulpit, the public offices, and the field of literature. When, in the year 1530, the Catholic representatives at the German Diet insisted on reading the Augsburg Confession in Latin, the elector, John of Saxony, observed, that it behoved Germans to hear and read that memorable document in the German language; to which the Emperor assented: and the document was accordingly read in the High German translation. The religious treaty of 1555, which secured to the Protestants the free exercise of their faith, confirmed the ascendancy of the High German language; and at length even the Catholic clergy of Germany were constrained to adopt the language of him, whose doctrines they had so often denounced. I need not dwell at any length on the effects produced by the Reformation on the moral, political, and intellectual state of Europe—effects, visible even in those nations, which had not hailed that great event as a crisis leading to health and strength, nor adopted the doctrines then promulgated*. Germany

* It may not be irrelevant here to remark, that the speaker delivered this Introductory Lecture, not as a theologian adopting and professing particular dogmas and tenets; but as a literary inquirer, in which capacity he alluded to the Reformation as to an historical event, and estimated Luther as an historical and literary personage. All sects and parties, of whatever creed or persuasion, political or religious, should agree in this great principle of true liberality,—viz. That in the field of philosophical inquiry, *freedom of thought and fearless judgement* are the only means for arriving at truth—the end of all science.

in a particular manner experienced those effects, but they were there of a very mixed nature. A new impulse had indeed been given to the right of thought, and it was freely exercised ; but the animosities which arose not only between Protestants and Catholics, but also among Protestants themselves, plunged the nation into polemical disputes, injurious to the national character and to the efforts of truly scientific men. The language suffered severely by these controversies, which were all either carried on in Latin, or interlarded with Latin phrases ; yet, having taken deep root in the affections of the people, its progress, though slow, continued unremitting till the beginning of the seventeenth century, when it had the advantage of a new and improved treatment. Martin Opitz, at the head of a poetical school, was the first to apply himself to the metrical structure and general improvement of the language, thus setting a highly meritorious and beneficial example. He wrote during the *Thirty Years' War*, and his language is less corrupted than might have been expected from the conflux of nations then assembled on the blood-stained fields of Germany. But a danger more imminent than war was fast approaching. By the Westphalian peace of 1648, the French obtained a political influence on the affairs of Germany, which soon made itself felt in the moral and intellectual life of the latter country ; and when the age of Louis the Fourteenth, by the French regarded as the golden age of their literature, arrived, that lively people were extremely anxious that their more sedate neighbours, the Germans, might participate in the fruits of their advancement. These latter, seduced by the selfish policy and mischievous example of their princes ; dazzled by the glare and glitter of the refinement and fluency of French manners and conversation ; and also, it must be avowed, misled by an apparently natural tendency amongst the higher classes of Germany, to admire and imitate what is foreign, while they scorn and neglect what is their own,—assumed the French manners and morals of the age of Louis the

Fourteenth, and with them the French tongue ; suffering their own genuine and profound language to be deteriorated by an unnatural mixture. It is in the latter part of the seventeenth and the first half of the eighteenth century, that we find the German language really degraded ; in which state it lingered on till the middle of the last century, when it was roused from its torpor by Lessing, Klopstock, and others, who soon spread new life through the literary world of Germany ; and at the close of the eighteenth century we find the language expanding in renovated strength and beauty. Native poets and philosophers polished and enlarged it ; many old genuine German words were restored, and new ones, which had neither gained nor deserved the right of denizenship, expelled for ever. The nation at large supported these exertions of their great men, and rewarded them with general applause and profound respect. The German language no longer appears in that motley garb which so ill became its grave majestic character : its wants are supplied from its own inexhaustible stores, which historical inquirers have laid open. The immeasurable empire of ideas and perceptions is equalled by the boundless treasures of the German language ; and the native author, who seeks there, will have no need of borrowed expressions from any foreign language.

It is not unfrequently objected to our poets and philosophers, that their style is dark, mystic, and unintelligible ; a reproach which, if I understand it right, is directed rather against the authors than the language : but I hope to prove that, even so considered, it has but little foundation.

The supposition that all languages possess an equal power of expressing certain notions, ideas and perceptions, is erroneous. Many of the modern languages, for instance, surpass the Germans in the number of words designating objects of the visible world ; many equal it in those representing the images and ideas which arise in the human mind by the immediate reflection of the visible object : but all yield to it in the power of expressing the internal life

of man ; the several states of mind, sentiment, feeling, and intuition : in proof of which I might adduce a number of such words that could not be translated into any other language. This esoteric part of the language, so peculiarly adapted to speculative inquiries and the works of fancy, yields its treasures chiefly to the poet and philosopher. The boundless world of imagination and reflection is the scene of its brightest triumphs ; and thus it may be true, that the philosophical and poetical works of the German classics are difficult for a foreigner to translate, nay, even to comprehend, if he have not studied the language philosophically, nor penetrated into that hidden sanctuary where the world of thought gives birth to that of words. The difficulty, however, arises principally from the subject and not from any obscure perception on the part of the author, nor from want of adequate power in the language to express such perception clearly.

But though the language be thus rich in one respect, it may be termed poor in another. There are many relations in social life, not springing from national sources ; many notions prevailing in political and diplomatic affairs, for which the German language has no words. The French tongue, more than all others, abounds in niceties for which the German has no expression, because the German people have no such conceptions. The celebrated Leibnitz, speaking of the German language, says, that it can only express *real things* (*des choses réelles*), and knows nothing of *chimæras* (*des chimères*) : and he adds, " therefore have I often boasted to Frenchmen and Italians, that we Germans possess a *touchstone* of thoughts, unknown to all others : and on their requesting to know something of the matter, I have told them that this touchstone is our language itself. For whatever can be said in it without borrowed or unusual words—that indeed is something real ; but empty words without meaning, being as it were the scum of idle thoughts—such our language has never adopted."

In euphony and melody the German cannot, it is true,

be compared with the languages of Roman origin ; but it far surpasses them in rythmical structure and harmony, which, in our language, is so closely connected with the deep meaning of words. The *sense* of a word, the *depth of thought* which it conveys, and its *intrinsic* worth, decide its metrical importance ; and not, as in the Classical languages, the *quantity*, or measure of time necessary for pronouncing a syllable. The leading sense decides also the *accent*, which, with few exceptions, falls on the stem of the word, as the representative of the original notion ; whereas the relation of this notion to other objects is expressed by subordinate syllables. To this tendency in the language—to be more deep in the *sense* than melodious in *sound*,—I ascribe the abundance of words and syllables in which the most insignificant of all vowels, *e*, is the predominating, to the great injury of sonorousness. I leave musical connoisseurs to decide how far the character of German music may correspond to that of the language as just described ; but as I understand it, there also harmony and deep expression is found to prevail over melody.

If we consider the structure of the German as compared with that of the other modern languages, it appears as venerable as age itself, but at the same time possessing all the distinctive qualities of youth. Unmixed with foreign elements, it has preserved the leading features of the Teutonic character, while from year to year it continues to increase and develop itself in various forms. Many of the modern languages may be said to be completed, for they can grow no further by their own internal powers. The legislation of academies and the authority of classical writers have described the magic circle, within which they must henceforth ever move. If new words be requisite in order to express new ideas, they must be taken from the old languages, as nothing can be furnished from the native stores. In *this* sense, indeed, the German language is not yet completed ; its capabilities are not restricted by any literary legislation, and its various inversions and facilities for the

formation of new words are so great, that it may be compared to the arithmetical science, in which numbers may be combined *in infinitum*. Thus though the language be, in this view, *incomplete*, it is in a state of *perfectibility*; though not *melodious*, it is *harmonious*; though not the fittest for light and fashionable conversation, it is, perhaps, that best adapted for the communication of profound and serious thought and feeling. At the present moment the German language seems to excite among foreign nations an interest commensurate with its intrinsic value. By the French and Italians it is no longer considered as a barbarous jargon. In Scandinavia and Denmark the taste for German language and literature is the predominating: in Russia it disputes with the French for precedence; and in England, I rejoice to say, that it is rapidly gaining ground. I have neither the intention nor the wish to ascribe this *solely* to the acknowledged merit of the German language and literature. To me it appears a consequence of that growing tendency among Europeans to study the modern languages more than was done in former times: and I propose, with your permission, to offer a few remarks on the chief causes which have led to a change so salutary and desirable.

When at the close of the fifteenth century the European world received a new impulse, it was chiefly by the profound study of the Classical languages that the revival of science was effected, and the great work of religious reformation prepared and promoted. But while this Classical study was prosecuted in a scientific and philosophical spirit, which was kept alive by the distinctions awaiting those who acquired a proficiency in them, the study of modern languages was entirely neglected. The Latin tongue was the sole medium for communication on scientific subjects; so much so, that many eminent scholars were better versed in this ancient language than in their own. The chief co-operators of Luther in effecting the Reformation, wrote in Latin; in which both Hutten and Melancthon expressed themselves more skilfully than in German. The celebrated

Erasmus, though Professor of two German Universities, knew nothing of the language ; and I fear that his proficiency in English was not much greater, notwithstanding that he resided a considerable time in England, and delivered lectures at Cambridge. In Italy his life was in imminent danger from his inability to explain himself, on the occasion of a misunderstanding with the populace. Learning at this period was confined to a very small class of the community, who carried on the literary intercourse with the scholars of other countries in that language which was considered the only one calculated for the just communication of ideas. But those times of national seclusion have happily long since past away. The Latin language has lost its paramount importance as a medium of learned communication ; and in proportion as the modern languages have particularized themselves, and the different nations individualized their several characters, in the same proportion the intercourse between the various people has become general and intimate. To complain as Dr. Murray does, that the nations have not a general language, is much the same as to lament that all men have not the like physiognomy. There is nothing in nature of this general cast. Every where we see variety and change ; and the more perfect the organization of an object in the visible world, the more marked and peculiar is its character. The same occurs to us in history. In their youth, the European nations bore a greater resemblance to each other in moral character and language :—growing to the manly age (if I may so say) their distinctive characters appear to us more strongly marked—intellect and mental strength beaming in every feature. You will find them delineated in their religion and language, in their political and social life. The nations of modern Europe are all more or less approaching to this state of manhood, and consequently to a higher moral alliance than diplomatic wisdom can effect. Policy and Fanaticism, sword in hand, may for a moment arouse hatred among nations ; but Religion and Philosophy, Science

and Poetry, bearing the olive branch, will soften and subdue it. The commercial and intellectual state of Europe has nourished and promoted in the nations a tendency to unite and to respect each other; and in so doing, has produced among them a mutual regard for their several languages. The Latin tongue is no longer exclusively used for scientific inquiries; and the French, by which France has gained more conquests than by her sword, has lost its universal prevalence. So great now is the intercourse between the European nations, that, for the man of business as well as for the scholar, it is necessary to be master of one or more of the foreign languages: and these languages, having gradually gained that degree of cultivation by which they are enabled to serve the purposes of literature and science, have, like the Classical languages, secured the station due to them. Each of them is regarded by the nation which speaks and writes it, as preferable to every other. This indicates self-respect and national feeling, which, as a proof of independent spirit, we ought to estimate. Each of them is a true cast of the features of the national character, which should induce us to study it, if we wish to become acquainted with the history of the people. Each of them, in fine, is to the other not an envious foe, cherishing national hate; but an ally, helping to lead the European nations to the great end of Christian mankind—moral and intellectual perfection. And herein, Gentlemen, let us hail the gratifying symptom, that these nations are beginning to consider themselves as members of that great family, of which the Creator is the common Father and invisible Ruler.

But is the study of modern languages, though thus generally acknowledged as necessary, pursued in the proper spirit? Do the teachers and students undertake the study with an earnest and profound reverence for the spirit which lives and breathes in every language? I regret to say that this appears extremely doubtful, and that the reverse may be regarded as the rule. While the other arts and sciences are embraced with all the exertion of mental

power; while the study of the Classical and Oriental languages is deemed a difficult one, which must be treated in a truly philosophic spirit,—the study of modern languages is regarded as a secondary object, and one which may be pursued in pastime. Modern languages are taught carelessly, learned carelessly,—and why? I find the chief cause in the erroneous notions prevailing as to the rank which this study ought to hold. Those who teach it, think it very easy, though somewhat tedious to impart a modern language: they treat it, as if great exertions were unnecessary for its acquirement, and as if they were not bound to convey a deep and solid knowledge of it to the student. Those who learn, take on their side a similar view of the matter, —But are not such wrong? Is, for instance, the structure of a word less wonderful than that of a flower? It springs forth from the human mind as mysteriously as does the flower from the bosom of the earth. It has its root, and its stem; it has its leaves and branches, in its flexions and derivations: nay more, it has its *sense*, as the Philologist can demonstrate, while the Botanist cannot do so for the flower. This being the case, it really appears to me somewhat singular that Botany should be ranked among the sciences, and the study of modern languages not; neither can I conceive why the Classical languages should enjoy this distinction more than the modern. I should imagine that Shakspeare and Schiller, Dante and Calderon, have their places on Parnassus, as well as Pindar and Horace. We very properly study the latter with diligence, but we ought not to treat the former with disregard.

If then we admit that the study of modern languages, when undertaken at all, should be embraced with a scientific zeal equal to that bestowed on the attainment of the Classics, how great must be the reproach to which our times are liable, for the superficial treatment universally shown to this science! It cannot be denied that the fault is chiefly chargeable on those teachers who, without any exalted idea of the real dignity of language, and without any philoso-

phical knowledge of its admirable structure—nay, without the necessary acquaintance with its history,—have undertaken the responsible duty of imparting it to others. But we must also admit that they may, not unfrequently, have been misled by the eagerness of the pupil to gain some—no matter how superficial—knowledge of the language; content so that it might enable him to carry on a mercantile correspondence or fashionable conversation, or at least to secure him against the risk incurred by Erasmus, when travelling in a foreign country. In order to satisfy this anxiety, and also, it may be, to diminish their own labour, the teachers, forgetting what they owed to their language, have framed novel methods, more suited to the rage for speedy and superficial acquirement, than to the wants of serious application. Every year we see some new-fangled system which lives for its day, and is then abandoned and forgotten; not so much because its futility is discovered, as because some newer method appears, promising to teach much more in a much shorter time, and at a much less expense than those which have preceded it. These methods are all honoured with the title of *scientific* and *philosophical*. And thus we need not wonder that, as regards the study of modern languages, these terms have fallen into somewhat bad repute. The injurious effect produced on the study by these multifarious contrivances is palpably evident. Not regarded as a portion of philology, it is supposed to form a part of some nondescript acquirement, and the regard for the teachers is proportionate to the estimation in which the study is held. But let us hope that a better period is now approaching. I do trust, Gentlemen, that in the future records of this Institution, it will be registered as not the least among the many brilliant instances of enlightenment and scientific spirit evinced by the founders, that they in a dignified manner have allotted to the study of modern languages that place among the other branches of science to which it is justly entitled. Of all the Universities with which I happen to be acquainted, the University

of London is the only one in which Chairs for the modern languages and literature are established. Here then, at least, the study of these languages ceases to be deemed a subordinate pursuit, or one which may be treated in a slight and superficial manner. It is expected that the Professor after having been placed in a situation honourable to himself, as it will undoubtedly afford him the means and opportunity to prosecute his scientific researches effectively, will correspond to the views of the founders, by teaching his science on sound and unerring principles; and, as far as in him lies, by inducing the students to a solid study of the language which they wish to acquire. I trust, Gentlemen, that we, the Professors of modern languages, shall be found to answer these expectations; but the success of our endeavours must materially depend on the willingness and zeal with which the students support us, by adopting and pursuing their studies in the proper spirit. On this point, Gentlemen, I can only say, that I wish to make you my allies, in achieving the good opinion of the founders of this institution and the confidence of the public. And in order that you may know on what views I shall proceed, when guiding you in the study of the German language, allow me to touch slightly on a subject, which has been admirably elucidated by the profound inquiries of celebrated modern German scholars, such as Baron Wilhelm von Humboldt, and Dr. Carl Ferdinand Becker—inquiries which, I trust, will enable me to lead you by a secure and interesting path to a solid knowledge of the German language.

By philosophical induction and close investigation into the history of the various languages, from their dawn through the different degrees of development until their present state, thus much appears to be clearly ascertained, that language possesses an organical structure like to man. As it is only the joint existence and co-operation of spirit and form which constitutes man in his mortal state, so a word exists by the mutual action of thought and sound. When the intellectual power is awakened in man,

it reveals itself by words, which are thus the representatives of his conceptions. With the growth of intellectual power, that of speech keeps pace ; and though there may be feelings and forebodings in the human mind which are unutterable, yet thought itself—the clear conception—springs forth from the mind embodied in a word. In this form only it emerges from the recesses of mind, intelligible to ourselves, though not to others till it be uttered. Language was the first foundation of social life, for without it human society is inconceivable. But as every individual has his peculiar sound of voice, accent, expression, and mode of utterance, and as his particular character is expressed in his language ; so also is it with societies or assemblies of men formed by placing themselves under one head, or by migrating to other countries: from one primitive tongue dialects may have proceeded, which in progress of time coalesced into language. But under all circumstances conception and word maintained their organical connection. The primitive conception remained embodied in the primitive or radical sound ; and when new objects presented themselves to man, when life itself became more complicated, and called forth new ideas, placing them in connection with the primitive conception,—the primitive sound, in order to express these relations, altered its form by flexions, prefixed and affixed syllables, by interspersed consonants and altered vowels,—a change which was variously effected by the various tribes. Dr. Murray has attempted to reduce the number of original sounds to nine, from which he derives the development of all the European languages. I do not venture to decide how far he may have been right in this conjecture ; but we gain thus much from his inquiries, and those of other eminent philologists—that the number of radicals, as compared with the mass of derivatives, is in every language extremely small. The radicals of a language, as is proved by analytical and etymological enquiries, are *verbs* with an *active signification*, from which substantives, adjectives, adverbs, pronouns, &c.

have been successively formed, to meet the necessity of expressing new relations of ideas. When we have traced the words of a language to their primitive source, and thus know, as it were, the history of such words, we perceive the many derivatives branching out of them not accidentally, but according to organical law. To discover the true sense of the prefixes, affixes, and alterations of vowels, which always convey a peculiar signification, and particularize the primitive sense of the *stem* of the word, has been one of the chief objects of modern philological study. Gleaning on this field, in the course of our study of German language, I trust, Gentlemen, that our object will be more speedily attained by employing the *reason*, than by a mere exercise of the *memory*; as a great number of words will insensibly impress themselves on the mind, and a clear insight into the spirit of the language will be secured. At the outset we shall proceed slowly with reading exercises; as your pronunciation, which must not be considered a barely mechanical exercise, will greatly depend on your first exertions. You can only seize and retain the sound of a word when you know its sense; you can only read expressively when you understand the whole period which you are reading: and therefore it shall be my care to let you read such exercises as are translated, and with the translation of which you will be provided. We shall then proceed with the grammatical structure of declensions and conjugations, which will be best learned and illustrated when you are translating an easy author. Your attention will be directed to the etymological and analytical part of the words, which we have read; without, however, losing sight of the syntactical rules.

Within the term of six months you will, I hope, have made such progress that a more philosophical investigation into the nature of words, their primitive and metaphorical sense, may be instituted; a comparison between the English and German languages be profitably pursued; and German composition commenced with some prospect of

success. The speaking of the language may be attempted, at least at the close of the term, when it is hoped that you will understand me if addressing you in my native tongue : but I should be wanting in candour did I not avow to you my sincere conviction, that your speaking the language properly must depend upon your previous proficiency in understanding an author, and in composing correctly. It would, indeed, be possible to commence very early with speaking exercises, and towards the close of the term you might be enabled to converse tolerably well ; but this trivial advantage, if an advantage it may be called, would be gained at the expense of that thorough knowledge of the language which it is my duty to impart, and which you should be chiefly anxious to attain. Having once attained it, speaking will easily be acquired by constant practice. The *correct* speaking of a language must always proceed from a full understanding of its grammatical structure and character. Certain it is, that you may write well and, from want of exercise, speak badly ; but more certain is it, that you will find no one who writes badly and speaks correctly.

I trust that, upon a consideration of the reasons which have induced me to propose the plan of instruction just laid down, I shall not be charged with a pedantic adherence to principles opposed to the doctrines now prevailing among the teachers of languages. It is my duty to abstain from leading you to barren and speculative inquiries, or wasting your time by etymological researches ; but I must equally avoid the opposite error of carrying you on rapidly to a superficial knowledge, at the cost of solid acquirement, and of the dignity of that branch of science which I am to teach you. To show you the organization of the language ; its affinity with others, particularly your own mother tongue ; to enable you to appreciate its spirit, to read those authors who are the glory of the German nation ; to afford you the ability of writing correctly and elegantly, and, if the time will permit, of speaking so ;—*these* constitute my object : and I call upon you, Gentlemen, to give me your indispen-

sable support for the attainment of it. As a foreigner, and, consequently, unable to express myself in English so fluently as I could wish, I have to request for my ensuing lectures a continuance of that indulgent attention which has been this day shown to me; and hope, that if your patience be at all commensurate with my endeavours not to need it, I shall overcome the difficulties under which I at present labour.

That the study of the German language has of late so much increased and still continues to increase in this country, must be hailed by every German, who loves his own and esteems the English nation, as a gratifying symptom, that the great literary exertions of Germany begin to be justly appreciated. For, Gentlemen, I think that among nations as among individuals, a just appreciation can only be formed where the congenial mind undertakes the office of inquiry. The productions of a genius will be most valued by him who has sympathizing views and feelings, and in whom the ray of truth and beauty kindles the enthusiasm of noble emulation. The literary world of Germany has long done ample justice to the literature and national character of England. The study of your great poets, especially that of your incomparable Shakspeare, has had no inconsiderable effect upon the literature of Germany, as I shall be able to show to you in my lectures on that literature. It was your *Bacons*, *Lockes*, *Newtons*, and *Humes*, who roused the slumbering spirit of philosophical study in Germany: they suggested ideas which our philosophers investigated and enlarged, or on which they founded new systems. It is, then, but justice, it is but requital, that England should notice and fairly estimate the progresses which have led to the present state of literary and scientific cultivation in Germany.

In conclusion then, Gentlemen, allow me to say, that when you, by the deep and earnest study of the language of the Germans, shall be enabled to appreciate their literature; when you shall have been excited by it to the

study of their history, following the development of events, moral and political, which have influenced the German character,—then, and *only* then, will you be qualified to judge that character fairly. You will probably find the Germans in their life, as they appear in their literature : the inward world of thought and feeling has always predominated with them. They have been led to national exertions more by indistinct impulse and enthusiasm, than by calculating intellect ; and while the love of liberty has ever warmed the German breast, it has burned most fiercely when their right of thought or freedom of conscience was impeded. It is this, their contemplative tendency, which has led them to cultivate the pleasures afforded in the seclusion of domestic life, rather than to strive for those inalienable rights which alone can *secure* private happiness. The German steps from the narrow circle of his family into the boundless field of speculative research ; but, unhappily, he too often forgets that it is only by his exertions for national welfare that he can give a practical value to those researches. No people has ever more actively and successfully cultivated the empire of ideas—none neglected more deplorably the affairs of the commonweal and of actual life. The Germans will be found admirable fathers, virtuous members of society, loyal subjects, eminent scholars,—but careless citizens. There have, however, been struggles—glorious ones—for national union and independence ; but the rousing spirit has been checked and stifled, and the people soon lulled into a contemplative slumber by the cradle-song of their many thousand cosmopolitical writers, who, with few exceptions, have neglected to afford scope for public life and national activity. In theories and speculations the German scholars stand foremost. Their extensive learning is universally acknowledged, and Germany is considered as the great mart of ideas, which are practically applied every where but in Germany. In history, they have made the most profound researches ; in their poetry, the visions of philosophy and the incidents of

common life, are admirably portrayed. Yes, Gentlemen, the present state of German literature is a true mirror of the national life of Germany: yet their *language* now stands forth—a warning spirit; the narrator of the past, and the prophet of the future. As long as it shall exist in its progressive state, so long may the expectation be indulged, that Germans, strong by national union, will one day occupy that rank among the nations, to which their history and their lofty character entitle them.

When, Gentlemen, I shall have made you acquainted with the organization of that admirable language; when you yourselves shall have acquired a thorough knowledge of it, and of the treasures which it contains,—then I shall feel truly gratified, if you will participate with me in the belief and hope, that, like the mysterious statue of Memnon, it will resound its finest tones when warmed by the sun of Liberty, which, in your own free and happy country, has called forth so many masculine, so many undying sounds.

THE END.

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AN
INTRODUCTORY LECTURE
DELIVERED IN
THE UNIVERSITY OF LONDON,

On TUESDAY, NOVEMBER 4, 1828.

By GEORGE LONG, A.M.

PROFESSOR OF THE GREEK LANGUAGE, LITERATURE, AND ANTIQUITIES.

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INTRODUCTORY LECTURE.

GENTLEMEN,

IT is now about three hundred years since the study of the Greek language was introduced into the Universities of England. The public teachers of Italy had already devoted themselves to this new pursuit, with all the ardour of men who are exploring an unknown region; and, aided by the Greeks of the Eastern Empire, they had succeeded in removing the greatest obstacles to their progress. In some parts of Germany, either the novelty of the study, or a curiosity to examine the mysterious writings of the Greeks, brought a crowd of students around the learned expositors of that day.

John Reuchlin, one of the early and most zealous teachers of the new language, informs us, that he explained a Play of Aristophanes to more than three hundred auditors in the university of Ingolstadt.

In England the Greek language was not established as a branch of public education without violent opposition from those who were unable to teach and unwilling to learn it: the fear of innovation, and the interests of the regular instructors were opposed to change, and also to improvement.

The Greek language is now taught even in the most remote and obscure districts of these two islands: it employs several years of the education of a large portion of the youth of this country, and it is recognised as an important part of general education in all our Universities. In the most civi-

lized parts of continental Europe, but particularly in Germany, it is prosecuted with an industry, a patient research, and a truly philosophic spirit, that command our highest admiration. The inhabitants of North America, who speak the same language with ourselves, retain, as we might expect, a system of instruction that differs but little from our own: the Greek language is studied in the numerous schools and colleges scattered over twenty-four separate states, and several extensive provinces.

It is not our purpose at present to inquire what causes contributed most materially to the extension of this study, or what motives, independent of the habit of imitation, induce us *now* to spend so much time over a language, which appears less generally, or less immediately useful, than many other branches of knowledge.

But at the opening of a University established for the purpose of diffusing useful knowledge, it may be fairly expected that we should state distinctly what advantages may be derived from one or two years' diligent study of the best Greek writers.

It may appear to some, superfluous labour to recommend that which is generally esteemed, or to demonstrate the value of a pursuit which is almost universally acknowledged. But since the reasons alleged in defence of this branch of study, when objections are made to it, appear unsatisfactory and insufficient, and because they are not the reasons which ought to influence us in prosecuting it, the remarks I am going to make may not be entirely unnecessary.

We have various essays written to prove the value of what is usually termed a Classical education: but this is not done by showing the real nature of the study, with its immediate and remoter uses; but rather by vague declamation, appeals to authority, to established usage, and not unfrequently by an affected contempt for other kinds of knowledge. In opposition to the defenders of this system, we find at the present day some of the able and ardent promoters of scientific acquirements, and their application to

the necessary and useful purposes of life. These opponents consider as worse than useless the almost exclusive study of one or two languages, on which the labour of ten or twelve years is frequently bestowed. The effects of this education they observe to be often unfavourable to the development of the reasoning powers, and they are led to condemn those pursuits which seem so injurious to the individual, and to contribute so little to the public interest.

The most necessary knowledge for every community, we all readily admit, to be, the power of adapting the materials furnished by our globe to the preservation and to the enjoyments of animal life; and the most useful, both for the community and the individual, is a proper understanding of their social relations to each other. But there is no kind of knowledge, if we use the word in its proper sense, that is not useful both to individuals and to communities; it all contributes in various degrees to the great objects already mentioned.

The study of language, which is an important part of the study of the human mind, and an acquaintance with the political history of our species, of which written language is the depository, are subjects of as much utility, both direct and remote, as any which claim a place in general education.

The division of languages into ancient and modern, or dead and living, though it may be useful for the purpose of enabling us to assign by a single technical term a writer to one great class, has the disadvantage of separating authors who treat on the same or similar subjects. In this way there arises a confused idea, that a writer who is classed among the ancients is something essentially different from one who is called a modern; and to this there is added the indistinctness which results from the distance at which the object is supposed to be placed.

All who are not living writers belong to an age that has passed away; and as they daily recede further from us, they acquire the character of antiquity: the real distance must

be estimated by the ease or the difficulty with which we can judge of their labours, criticize their narratives, and form an estimate of the condition of man at the period when they wrote.

If we examine then the historical records of past times, we find that we have more ample and better materials for a knowledge of some portions of history commonly called ancient, than we have for judging rightly of many periods, which are termed modern.

When we learn that a large class of valuable writers have used a language which is not our own, we feel at once a curiosity and a motive sufficient to induce us to acquire it: though translations will partly supply us with the useful information contained in other languages, they are but imperfect mediums of communication, and hardly sufficient to convey an accurate notion of those nice moral and political associations, by which the habits of nations are formed. (The just perception of a writer's meaning is often inseparable from the language in which it is expressed.)

There is great advantage to be derived from examining the ideas of the exalted minds of every age and country, whatever is the language in which they are preserved. The varieties in the social systems that have existed, and still exist in the world, create various ways of considering some of the most important questions to the human race; and we know that a truth may be evident and generally admitted in one age or country, which in another we are prevented from seeing by the circumstances in which we are placed.

There appears, then, to be no reason to array the ancients, meaning the Greeks and Romans, against the moderns, by which no definite idea is expressed; nor to compare, as some have done, ancient and modern learning, for the purpose of deciding which may claim the superiority.

Our age enjoys the rich inheritance of accumulated knowledge from the infancy of the world to its present antiquity; the collective stock, to which we are adding our portion, is continually increasing; and the powers, both moral and

physical, which now obey our command, are strong enough, if properly directed, to determine the condition of our posterity. But the immense advantages which society has derived from the division of labour in every department of human industry or research, are perhaps not obtained without some loss of individual superiority: our combined efforts surpass those of any former state of society of which we have any records, but we may doubt if many of us attain to an equal elevation with the best minds of some former periods.

The portion of history which is generally called ancient, is principally contained in two languages, that are now inseparably connected with the opinions, the literature, and the institutions of modern Europe. One of these, the Roman or Latin, once the language of conquerors, furnished the principal materials for a number of derived dialects, the study of which, without that of the original, is neither easy nor complete:—the other, the Greek, after a still longer dominion, lost its influence in the world; degenerating into a corrupted form, yet without losing its identity, it ceased to be a written language in its ancient form, at a period uncertain but not very remote from the present.

It may be useful to state briefly what kind of books are extant in the Greek language, and to specify particularly a few of those historical writers who are most deserving of an attentive perusal. It is only a few that can be mentioned in so limited a time, and only a very small proportion that can enter into a course of University instruction. The accidents of time have swept away much both of the useful and the useless labours of the Greeks; the magnitude of the remains may be estimated from the diligent perusal or even the rapid survey of Fabricius' learned volumes.

The Greek language contains the greatest portion of that written history which is interesting to Europeans, and those who belong to the European race: it comprehends also nearly all that we know of the early condition of those parts

of Asia and Africa to which the ardour of commercial or military enterprise conducted the adventurous Greeks.

We possess in the Homeric poems, the *Iliad* and the *Odyssey*, the most ancient existing specimens of the Greek language, and a picture of the manners of an age beyond the reach of authentic history. Modern criticism has rather increased than diminished the darkness which hangs over the origin and the history of the Homeric writings; but we may safely attribute them to an age beyond that of any written documents in the Greek language, and consider them as historical poems that deserve and require our most careful and diligent study.

Of the historians who preceded Herodotus, we know but little beyond a quotation or two found in that writer, and notices of their works with small fragments of them scattered through the books of various compilers. Herodotus has sometimes been called the father of history, since he is the oldest extant Greek writer to whom the name of historian can be properly applied. His object was, as he tells us, to preserve the remembrance of the great events of preceding times, and to show how the Greeks of Asia and of Europe commenced their protracted struggle against the collected nations of the Persian Cyrus and his successors.

He visited nearly every part of the world that was then accessible to Greek commerce; he derived his information from examining the natural products, and contemplating the physical condition of each country, with the changes produced by the labour of man, or the unceasing operation of natural causes. By diligent and persevering inquiries he attempted to learn the early and ancient history of the Persians, the *Ægyptians*, and other Eastern nations: his plan seems to have been to register with fidelity all that he heard, and in general to leave to others the task of criticism.

His accurate detail of the great Asiatic movements entitles him, when we consider his opportunities of information, to be placed in the rank of contemporary historians:

the history of a Tamerlane and a Gengis Khan can elucidate and confirm the history of Xerxes.

The labours of our countryman Rennel, and the industry of foreign scholars, have contributed to enable us to read with advantage one of the most valuable of all ancient historical records: the obscurities of ancient tradition, the dark tales of credulity and wonder, and the remotest corners of the ancient world have received light from the well directed labours of the German critics.

Among the first and the most valuable of all contemporary writers is the Athenian Thucydides: he lived during one of the most distracted periods in the history of his nation; and he has transmitted to our age an eternal memorial, as he anticipated it would be, of the crimes, the madness, and the misery of intestine commotions among a people of a common origin and common language.

The first book of his history opens with some judicious remarks on the earlier state of the nation to which he belonged, which should never be lost sight of when we study the remoter traditions of the Greeks, or examine their historical poems, the *Iliad* and the *Odyssey*.

A rapid but masterly review of the principal events between the æra of the great Persian wars and the beginning of the Peloponnesian, connects his narrative with that of Herodotus. This portion of his history, compared with the compilation of Diodorus, deserves a better elucidation than it has yet received.

A work of Xenophon, entitled a "History of Grecian Affairs," continues that of Thucydides, and brings us down to the battle of Mantinea, when the evidence of contemporary writers unfortunately ceases to assist us in our inquiries.

The orators of Athens form, indeed, a body of contemporary history of no small value to a judicious and unprejudiced critic: for the period of Philip of Macedon, the father of Alexander, they are almost our only guides. But a much more important use of these writers to the philo-

sophic historian, is derived from the specimens of Athenian legislation preserved in their Orations. From the time of Solon, whose historical existence is somewhat obscurely seen, to the age of the great orator of Athens, we find the traces of numerous legislative experiments. The nature of the political constitution, the trade of the city, the mode of supplying it with foreign corn, the courts of justice and their proceedings, with all that relates to the great subject of public œconomy, are illustrated by the extant Attic orators. In their simple, perspicuous, energetic, and almost faultless language, the youth of this country will find materials for reflection, and the best models of correct taste.

Athenian literature presents us with the interesting spectacle of the rise and progress of the dramatic art. The history of a nation is something more than a detail of battles or political revolutions; it comprehends all the public amusements of a people, one of the best standards by which we can estimate their general character. The most refined, the most humanizing, and the most attractive, are those of the stage; which even when perverted from their proper purpose, may be favourably contrasted with the sports of the amphitheatre, or the barbarous pastimes of our own age.

The religious opinions of the Athenians are an important part of their drama, which in general requires a different kind of examination from that which is applicable to most modern dramatic compositions. The extant Tragedies of Æschylus, Sophocles, and Euripides, are but a scanty remnant compared with the original stock, but sufficient to enable us to judge more correctly of the age which produced them.

Athens is said to have no claim to the honour of being the parent city of Comedy, which owed its origin to the lively imagination of a Sicilian Greek. But the same people, who saw the tragic drama raised to perfection, were amused by the extravagant caricatures, the personal satire, and the ungoverned licence, which characterize the comedies of

Aristophanes. It is well known to those who have read this writer, that our word *Comedy* does not convey a correct idea of the nature of his compositions, of which it is not very easy at the present day to form an estimate that will be universally received.

The name of Aristophanes has long been associated with that of Socrates, and *his* portrait of the great master contrasted with that which we find in the philosophical writings of Xenophon and of Plato. The opinions, the habits and the characters of the public teachers in Greece, are subjects of laudable and curious investigation to those who make the moral and intellectual history of our species their peculiar study.

I shall not presume to decide what mental improvement may be derived from the perusal of Plato by the youthful student; but it may be safely affirmed, that the examination of the more difficult Dialogues should be reserved for his maturer age.

The influence which Aristotle once exercised over the minds of men was as extensive as the empire of his royal pupil, and it was more permanent. His works were illustrated or encumbered by a multitude of Greek commentators, and parts of them have been translated into nearly every European, and into several of the Asiatic languages. The Greek philosopher is known in a country where the fame of the most successful modern writer can hardly be expected to reach. A learned Jesuit of the seventeenth century translated one of his most useless works into Chinese, and presented that which is unintelligible in Greek, for the serious consideration of that ingenious nation.

Since the philosophy of induction has opened to us a new world, the opinions of Aristotle have ceased to fetter the human mind; but his really valuable writings have in some degree shared the fate which the rest deserved, and they are now less studied than they ought to be in a proper system of Greek instruction.

His works on Logic, his treatise on Ethics and Politics,

with his *History of Animals*, might form for the Greek student, according to his particular taste or pursuits, useful accompaniments to treatises on similar subjects in modern languages.

The writers that have been enumerated belong to the period which may be called the ante-Macedonian; and with the exception of two, they used that dialect of the Greek language which is called the Attic. They are considered to be the best adapted for the studies of youth, which in our country are seldom extended beyond them.

But our view of the intimate connection of the Greek language with the subsequent history of the world would be very imperfect, if we were to carry it no further.

The Greeks by their colonial establishments and their commercial enterprise, had diffused the varieties of their language, and with them the useful arts of life, from the coasts of Spain and France to the banks of the great rivers that flow into the north and eastern parts of the Euxine. Southern Italy, Sicily, most of the islands of the Mediterranean, part of the coast of Northern Africa, with the shores of Asia Minor, and the once inhospitable regions of the Black Sea, had felt the influence of their commerce and their arms.

When the youthful Alexander ascended the throne of Macedon, he directed the power which his father had been acquiring, to the accomplishment of a national object,—the destruction of the extensive empire founded by the first Cyrus. A general inferior to Alexander might have subverted the ill-constructed and tottering fabric of the Persian monarchy; and his claims to the title of Great, which is now part of his name, must depend on his merits as a benefactor to mankind, rather than on the more doubtful value of the reputation of a conqueror.

Under him and his successors the dominion of the Greek race was extended to the banks of the Nile, and even to the Abyssinian branches of that mysterious river; from the Hellespont, the boundary of Europe and Asia, to the

streams that contribute to swell the currents of the Indus and the Oxus.

The history of Alexander's expedition is preserved in Arrian, a compiler of a later age, whose judicious use of contemporary authors entitles him to be classed among them.

The city of Alexandria owed its origin to the desire of its founder to improve commerce: his most sanguine anticipations could not form an estimate of the value of his great undertaking. Till the voyage round the Cape of Good Hope was effected, Alexandria continued to be the most convenient spot at which the products of the East and West could be exchanged.

The great political revolutions caused by the Greek conquests in Asia, were followed by other changes equally important. Greeks and Asiatics were partially blended together by intermarriages, and the philosophy of Greece became mingled with the religious opinions of Asia. The language itself, though it retained its national characteristics, displayed the marks of a foreign intermixture.

That dialect of the Greek in which the Septuagint version is preserved, is most accurately designated by the name of Alexandrine: the learned Jews who were settled at Alexandria by the Greek kings of Ægypt interpreted the sacred books into this language, which their countrymen in a strange land understood better than the ancient tongue of their fathers.

To comprehend the writers of the age of the Ptolemies, and particularly those of Alexandria, it is necessary to consider the circumstances which modified the Greek language, to observe the words of Ægyptian or foreign origin, and to compare the variations in their meaning, orthography, or idiomatic usage, with the standard of Attic Greek.

The books of the New Testament, though they were written when the dominion of the Romans had subverted that of the Greeks, possess the general characteristics of the Alexandrine language, with some peculiarities arising

from local circumstances, as well as from the influence of the Romans.

The school of Alexandria claims our respectful notice : its history and character still remain subjects for more accurate investigation.

The earlier Greek kings of *Ægypt* were wise enough to connect their names and reputation with the establishment of a school of science and learning : their munificence invited to the new capital the learned Greeks of every country ; and the first commercial city of the ancient world once possessed the best school of public instruction. We are perhaps indebted to the critics of the Museum for the preservation of some of our favourite authors : geography, mathematics, and astronomy were improved by their labours ; and though it is not necessary now to study these sciences in Greek, their condition in that age will not be overlooked by the philosophic historian.

Some account of the Greek mathematicians and astronomers may be found in Fabricius.

The Roman subjugation of Greece was favourable to the extension of the Greek language : the savage victor was tamed into submission by the arts, the language, and the philosophy of his captive. The Roman began his education with plundering the fair towns of southern Italy, where he was first taught to admire the beauties of Grecian art : the pillage of Athens added to his treasures ;—but the most valuable part of his spoil was the slave that he carried home, to instruct and to humanize his son. It soon became a fashion for well-educated Romans to read, to speak, to translate, and even to write this foreign language : a new *æra* commenced in their history, and it was followed by an age that mankind will never cease to contemplate with interest and advantage.

The student of Roman history will find it necessary to consult the Greek writers, either in the originals or in translations, for the purpose of illustrating those of Rome, or for supplying the defects of the Roman records.

Polybius the honest, inquisitive, and judicious historian, Dionysius of Halicarnassus, Diodorus of Sicily, Appian, Plutarch, Dion Cassius, and others of a later age, belong in part, or entirely, to the historian of the Roman Empire.

It was during the dominion of the Cæsars that the language of the Greeks was most extensively diffused. It was taught in the college at Marseilles, at least as late as the time of Tacitus; in the imperial city of Rome, as well as amidst the fallen splendour of Athens, we read of a crowd of rhetoricians and masters. The university of Tarsus, whose eulogy we find in Strabo, vied with Athens or Alexandria in the reputation of its teachers and the number of pupils. The banks of the Euphrates, the Tigris, and the Nile, were then the residence of Greeks who cultivated the sciences, and the ancient literature of their nation. The garrison town of Samosata was the birth-place of the witty and inimitable Lucian: the obscure regions of the ancient Pontus would be now almost unknown, but for the description of a native,—the excellent geographer Strabo. Josephus, a Jew, recorded in the universal language of that age the antiquities of his nation, with the history of its last heroic struggle and its political dissolution. A numerous body of ecclesiastical and other writers, who belong to various ages and to many places, deserve our attention for the eventful period between the Christian æra and the conversion of Constantine.

The division of the Roman world created a division of languages; the Western Empire retained the Latin tongue, which was now diffused extensively over western Europe, and the Greek soon became almost the exclusive property of the Eastern Empire. It is unnecessary to dwell on the literary history of these subsequent periods: Constantinople had its historians who wrote in a language which is Greek, though not the Greek of Xenophon or of Plato.

Some of these writers have a value from being almost the only chroniclers of certain periods, and others from containing extracts of earlier and more valuable authors.

The language and history of the Greeks during the middle ages have been little studied; and this may be attributed to the rarity and high price of some works, as well as to the greater part of them being printed in a collected form, and being buried in the bulk of nearly thirty folio volumes.

The industry of the Germans is now presenting us with the Byzantine writers in a more accessible and an improved shape.

We cannot say precisely when the ancient language of Greece ceased to be spoken or written: it became so much changed, or, we may say, corrupted in the middle ages, that a particular glossary is necessary for studying the writers of that time. The capture of Constantinople in the fifteenth century by the Mahomedans, may be considered as the best general reference to the period of its disuse. It is also difficult to determine when the first specimens of modern Greek, commonly called Romaic, were produced. This language, which has received accessions and corruptions from Latin, Italian, and other tongues, still retains in the best written specimens such a general resemblance to the old Greek, that it may be read with little trouble by any person who understands the ancient writers.

I am not aware of any very excellent original works in Romaic; but it contains translations from many ancient and modern authors of reputation: future circumstances may give to it a greater value than it has at present.

Among the monuments of Grecian genius that have descended to our age, the best specimens of their works of art must be enumerated: the simplicity of their beauty may be contemplated with pleasure, and admired without affectation.

We who live in these later days feel the influence of the mental energy of a people whose most glorious æra is removed from us by the lapse of full two thousand years. The enduring materials in which the Grecian artist embodied his conceptions of beauty or usefulness, are models which we may study and imitate. But to copy in a servile

manner is only to imitate imperfectly: our works must bear, like those of our masters, the stamp and character of the age for which they are designed.

This brief and imperfect sketch of the political and literary history of the Greeks, and of its importance in connection with the history of the world, might perhaps have been omitted: if, however, it serves to supply the student with some intelligible motive for studying the Greek language, it will not be entirely without its value.

If we could all honestly and diligently inquire what studies are best adapted for the general education of youth, we should be able to improve our present system. By the best studies, we mean those which prepare them for their important duties as members of social and political communities. If then we were carefully to inquire, we should perceive that in many departments of knowledge which are deservedly valued and esteemed, the limits of usefulness for the general student may be soon attained; and that if his object is mental improvement, he cannot go beyond them without neglecting more important subjects.

The study of languages is now elevated to an importance, which is justly due to it when prosecuted with the enlightened views and the unwearied diligence that mark the labours of the modern philologist. By comparing the languages of many countries, we remove in some degree the obscurity that veils the origin and history of nations; and we approximate nearer to a knowledge of the real nature of human speech.

Language is the most universal means by which ideas are communicated from one person to another: it is the most ready instrument which we can employ to indicate the operations of the mind; but it is also one which is often used with very little skill or precision. The nature of it, as we have remarked, can only be well understood by learning other languages besides our own: a comparison is then necessarily made, which assists us in comprehending the real nature of words and their uses, and forms the mind to

habits of greater accuracy in expressing ideas, and in arranging them in order. But these advantages do not appear to be derived in an equal degree from every or from any mode of studying a language. When the study is prosecuted in the best manner, it will be introductory or auxiliary to the important sciences of Logic, Metaphysics, and other related branches of useful and necessary knowledge.

The best extant specimens of the Greek language are generally acknowledged to possess those excellencies which intitle them to be studied and admired; the characteristics of the best writers are simplicity and exactness in expression, without which perspicuity is not attained. The wonderful flexibility of the language is displayed in every species of composition; in exact and scientific description, in logical precision, in the almost inimitable ease and grace of simple narrative, we find but few writers in our own language who excel or equal the Greeks.

But the powers of this language are perhaps most distinctly felt by the perusal of the philosophic reflexions of Thucydides, the Dialogues of Plato, or the Comedies of Aristophanes.

There seems to be no thought however profound, no image however ludicrous, without its appropriate words and expression. To bring together the most inconsistent ideas, that never met in company before; to disturb all common associations by some extravagant picture,—was the delight and the merit of Aristophanes. Our language fails us in the attempt to express to an English reader what a Greek could comprehend and sometimes admire. *no medium*

The great objection to the study of the Greek and ~~Latin~~ languages, is the length of time that is usually employed in the imperfect acquisition of them: the most ardent supporters of this branch of public education cannot claim for it such unreasonable or exclusive attention as would leave the student unprovided with other knowledge, which is equally useful. The real obstacle to the acquirement of these languages is not their difficulty, but the want of the

best means for attaining the object, which is the power of reading the Greek and Roman authors with ease and advantage.

The recommendations of the Council have assigned two years to the study of the Greek language, in the scheme of general and preliminary education in this University: if the student comes with the necessary acquirements, which will presently be mentioned, it is expected that his own exertions aided by the guidance of his teacher, will enable him to read without great difficulty the best Greek authors. During the two years he will peruse carefully the most valuable parts of these writers, and his studies will be directed in such a manner, that at the expiration of the time he may have the inclination and the power to prosecute them with advantage.

In many professions the studies of youth will sometimes give pleasure and instruction in the midst of the severer occupations of mature age. The Roman orator and statesman found, in his favourite authors of Greece, relief from the pains of domestic and public calamities. If we can recommend to the youth and the men of our own country, and particularly to those who have no professional pursuit, any one object that will furnish them with instruction and amusement, we have added one more check to folly and misery, and one of the most effectual checks that has yet been discovered,—active and useful employment.

The mode of instruction that will be at present adopted in the Greek classes, is necessarily in *some* degree determined by the proficiency of those who enter them: the experience of future years, and improvement in early education, will enable the teacher to correct whatever may be found erroneous, and to extend the course of instruction with the increasing capabilities of the pupils.

The class will commence their Greek studies with the history of the expedition of the younger Cyrus, aided by the Greek mercenaries, against his brother the king of Persia. This book is selected because it is one of the most

simple and perspicuous narratives in the Greek language, and the best adapted for those who possess only a small knowledge of the subject.

Before the class commence the perusal of the *Anabasis*, I shall give to them a short account of its author, of the period when he lived, the principal events of his life, with a brief outline of what his history contains, and the means that he had of acquiring his information and preserving it in a written form. It is unnecessary to point out the value and the importance of such preliminary knowledge: it may be well to remark, that the class will never read any Greek author without receiving this essential and necessary introduction. Opportunities will constantly occur during their perusal, of calling the pupil's attention to passages which will illustrate and confirm the remarks that have been made. To render the subject-matter of the *Anabasis* interesting and useful, the geography of Asia Minor and the regions watered by the Tigris and Euphrates, will be explained both in written lectures and by occasional observations during the lessons of the class.

After the careful perusal of three or four books of the *Anabasis*, the class may without any difficulty and with much profit, read one of the easiest Greek tragedies, the *Prometheus* of *Æschylus*.

The history of the origin and development of the Attic drama will be presented to the class, as far as it can be collected from the scanty materials that remain. It will be useful also to make a few remarks on the difference between the drama and our own, with respect to its connection with the political institutions and the religious ceremonies of the age.

These two subjects will probably occupy the class during about one half of the first session, and if their progress answers the expectations of the instructor, they will then proceed to study the most useful parts of Grecian history in the original authors, commencing with *Herodotus*.

It was at first intended that the class should *begin at*

this point ; but till the nature and objects of the University instruction are more extensively known, it will be necessary for them to improve their knowledge of the language by the preliminary course which I have just described.

I will endeavour to explain the mode in which I shall direct their philological studies during the perusal of Xenophon and the Greek Play. The pupils who join the Greek class are expected to possess a competent knowledge of what is called the *accidence*, and the power to read with some degree of accuracy the simple and perspicuous language of Xenophon. They will necessarily have obtained some acquaintance with the relative positions of words, when they are arranged in sentences, a branch of grammatical knowledge which we designate by the Greek term *Syntax*.

The philosophical, I mean the true principles of language are to be investigated by the aid of etymology, which, if we may judge from most of our elementary books and lexicons of the Greek language, has been prosecuted with less success than other parts of grammar.

The nature of the Greek alphabet *will be explained to the class*, with the probable powers of some, and the certain sounds of other letters: this is a necessary introduction to the more accurate knowledge of the language, and to the observation of these numerous instances of compound and derivative words in which the representatives of similar sounds are interchanged.

The compound or derivative words that occur in each lesson will be resolved into their component parts, or reduced to the simplest form, called the *root*, where our inquiry terminates. To render the pupil familiar with this process, and likewise with the reverse operation, of forming from a given primitive the various derivative words, and assigning their respective significations, I shall exhibit to them in writing numerous examples of those regular terminations under which are comprised nearly all the words in the Greek language. From some primitives we find a

number of derivative words flowing by the most regular and simple analogy: in other cases the series is incomplete; but the accurate scholar can determine what would be the form of the deficient words, if they really did exist.

In this way, words will not be learned separately, but in classes, some of which will contain several thousand examples: much of the unnecessary labour that is imposed on students may be saved, and the pleasure of the pursuit will constantly increase with the increasing powers of the pupil. This plan presents no difficulties even to the youngest student: it is nothing more than doing with words what he is daily doing with every object that he sees; he examines things, and from general resemblances he assigns them to their respective classes;—if he can be taught to make the comparison more accurately, and to be more careful in drawing a conclusion, his understanding will derive advantage from the exercise, whether the subjects of comparison be things, or their representatives.

It is not my intention to insinuate any particular theory of language; but the examination of the facts which a language exhibits, and the application of the inductive system, bring us generally to that word as a basis, which grammarians call a verb.

This is not *always* the case, because the series is sometimes interrupted, and we are often obliged to be satisfied with coming to a noun or name of something; a term however, which, when properly examined, cannot be made to differ in real meaning from what is signified by the less intelligible word, verb.

The technical terms of grammar may be advantageously preserved when they form a plain and ready means of communication between the pupil and the instructor: if any are found by experience not to possess this essential quality, or to lead to confusion of ideas, they will be forgotten by never being mentioned. Those who have attended to the history of grammar, know that this has been the fate of almost innumerable useless terms.

It is a great error in instruction, and one that is observable in most lexicons, that the original or primary meaning of a word is generally not well defined ; if we attend carefully to the history of languages that we have the means of comparing, we discover that those may be considered as the original significations, which denote our perceptions of the physical objects around us, and their active operations or motions. From these are derived secondary and other orders of significations, which denote the operations of the mind : they are often called metaphorical ; a better term would be, metaphysical meanings.

If we can assign to a word one general meaning, from which all the rest are easily derived, we diminish the pupil's labour, and avoid that strange confusion of ideas which results from the great number of significations, and their disorderly arrangement in many lexicons.

The interpretation of all Greek words will be made in the English language ; and the Latin, which till lately was the medium of instruction, will be used like any other language, only for the purpose of comparison and illustration.

To the practice of explaining Greek by means of Latin, itself a language very imperfectly acquired, and quite as difficult as its sister tongue, we may principally ascribe the numerous ineffectual attempts to obtain such an acquaintance with Greek, as will enable a person to read the best writers with ease.

With respect to acquiring a knowledge of syntax, the most common practice has been to make the student commit to memory, or to peruse frequently, a number of general rules, the correctness of which he must try by the particular examples that occur in reading.

If reason or analogy cannot decide which is the best mode of acquiring the knowledge of any particular subject, a set of experiments so conducted as to leave no doubt about the accuracy of the results, might be sufficient to decide the question.

The study of language on principles similar to those by which other knowledge is acquired, has never been lost sight of by the best scholars in any age since the revival of literature; the nature of the materials of which a language is composed, and the uses to which they are put, may be better learned by the pupil making his own generalizations under the teacher's directions, than by studying the generalizations of others which were made by the same process.

It must not be inferred that no grammatical instruction will be given in the Greek classes; it is only about the mode of giving it that I now speak, and this is quite as important as the thing that is learned: all modes of imparting the knowledge of a subject should have some reference to the way in which the existing knowledge of it was attained, and also to the best means of extending it.

The attention of the pupil will be directed by remarks or questions to the idioms of the Greek language: one example will be elucidated by another similar to it, which the pupil has already met with in the course of his reading. He will be stimulated to activity and to research by inquiries as to the analogy of any new mode of expression to those already examined: he may then, but not before, be referred to the best grammars in which the general rule is laid down; it will then be in his power to correct and extend his own information or that of his teacher, and perhaps sometimes to criticize the grammarian.

It has been remarked by some excellent scholars, that the genius of the Greek language is not yet fully understood; and that many idiomatic expressions are either entirely misinterpreted, or imperfectly comprehended. A reasonable respect then for the knowledge which philologists have transmitted to us is proper and useful: the full exercise of our own judgment is necessary to elucidate what is still obscure.

The object of this kind of instruction is to teach the

student to think and to examine for himself: he will have learnt but little, if he is dismissed without the power of self-improvement.

A just knowledge of the prosody of the Greek language can only be acquired from the diligent perusal of the dramatic writers. During the study of Xenophon, the pupil will learn something by hearing his errors corrected, and by receiving a few directions that will be of most general application. He will acquire by the diligent study of a Greek Play or two, as much knowledge of the subject as is necessary.

It will be the business of the teacher to make himself acquainted with the best modes of instruction established in our own or foreign Universities, and it is his wish to receive the suggestions of those whose experience entitles them to give advice.

It is unnecessary to mention the particular authors or parts of authors that will be studied by the Greek class: they will occasionally be varied; and a few may in the course of time be introduced, that are at present seldom read in our colleges.

The historians and orators form the most valuable portion of the Greek that is extant: they will therefore employ the student during the greater part of the academical course. The dramatic writers and the other poets will not be neglected; but it is considered inexpedient to devote to them so large a portion of time as to the other authors.

That those who are present may form a correct idea of the mode in which a more difficult Greek author will be explained, I shall briefly describe the kind of instruction that will accompany the perusal of Herodotus. The information which is necessary to assist the pupil in understanding what he reads, will generally be given during the lessons, and conveyed in that form which commands most attention,—that of oral communication. It will be the teacher's object to do this, as far as it can be done, in the

way of conversation, and to encourage the pupil to make inquiries when any difficulty is not removed.

But written lectures will sometimes be necessary to explain that which requires more attentive consideration, and which must be gathered from various writers. The history of the heroic ages will be collected from Homer, and connected with Herodotus: some early associations may be disturbed, but truth must not be sacrificed to error.

A short account will then be given of the historical writers who preceded Herodotus; the nature of his language, compared with that of Homer and Xenophon, will be explained, and some remarks will be made on variations at present found in the orthography of his words. His mode of acquiring the information which he possessed, and the means which were then in use for preserving written records, will be considered; and for this it will be found that the critical study of the author himself furnishes the best materials. It has been well remarked, that an author in a work of any length cannot conceal himself from a careful observer.

The history and the language of the Greek nation are generally studied in too exclusive a manner: the political, commercial, and other relations of this people with those of Asia and of Africa, have only been elucidated as they require to be, by the industrious scholars of Germany. The history of the Phœnicians, the *Ægyptians*, and the numerous Nomadic tribes included under the general appellation of Scythians, will be collected from the few extant authorities, to which the pupil will always be referred.

The Persian monarchy, its origin, extent and nature, will be explained in a similar manner; and much light may be thrown on this subject by references to the more modern history of the Mongols and Tartars. Our conceptions of things remote and obscure can only be aided by referring to something nearer and better known.

The geography of Herodotus will require some explana-

tion; and this will lead us to consider the extent of geographical knowledge before and during the age of the historian, with the means by which the science was improved among the Greeks.

The colonies established by the Greeks in many parts of Asia and Europe, their political and commercial relations with the parent states, will form the subject for frequent remarks, or for special discussion. On this as well as on other subjects of remote times, the established facts of more recent experience will aid us in comprehending that which in the brief language of an ancient historian is often passed over without notice.

When we read that a body of Greeks landed on the coast of Asia Minor or Sicily, and deprived the natives of their lands,—for such are the concise expressions of the best ancient historians,—the student may perhaps feel little interested in a fact apparently so unimportant. But to him who has studied the history of modern colonization, particularly in the new world, this single notice will convey another meaning; the various struggles of barbarism against civilization, the gradual extinction or enslaving of the inferior race, with all the circumstances attending such great changes, will be present to his mind. This is not to call in the aid of the imagination, to mislead the judgment; it is only the full interpretation of that which is briefly expressed.

To explain then completely a writer like Herodotus, whose book is a valuable treasure of every species of curious and useful information, it will be necessary for the instructor to draw his illustrations from the many and various sources of our own day; and particularly from the narratives of judicious and unprejudiced travellers.

The compilers of a later age, such as Diodorus and Plutarch, will frequently be compared with Herodotus and the contemporary writers; and the student will be referred to the *history* of Mitford, that he may contrast the inferences of the modern historian with his own conclusions, or the

remarks of his teacher. He may perhaps be led in this manner to a more judicious and rational perusal of all historical records, than if he were left without such instruction.

This mode of studying a Greek author, which is nothing more than an attempt to explain his full meaning, and to give the pupil every assistance that is calculated to render the pursuit more pleasing, cannot be objected to on account of any supposed difficulty. The real difficulty consists in allowing him to read words that convey no distinct or accurate ideas, and to crowd the memory with facts that are unintelligible. This embarrassment is removed by the collection of another set of facts, which will aid him in conceiving what might be the nature and connection of those described by an ancient writer. It may be observed also, that this kind of instruction may either be very simple, or it may be made, if the class should ever require it, a part of their most laborious studies, requiring much examination of original authors, comparison of many passages, and the exercise of discriminating judgment.

The study of the Homeric poems is reserved till the proficiency of the pupil will enable him to read them with advantage. As this part of the general plan is by some considered imperfect, I shall make a few remarks on it.

The reading of Herodotus will be preceded, as it has been already observed, by a view of the earlier state of the Greek nation, which will be nothing more than an extension of that which the old historian has briefly expressed in the first part of the first book. The materials which will furnish this preliminary view are found in the Homeric poems, and the critical remarks of some later writers: the advanced student will be enabled to compare the conclusions of others with his own impressions, when he comes fully prepared for the investigation of this subject in the ancient historical poet. The origin of the Homeric poems, their early condition and their subsequent history, have been the subject of much dispute, in which is involved the

question of alphabetic writing, and the materials that were used in remote times for preserving it. The history of other nations must here be called in to our assistance, the opinions of the most judicious critics must be stated, and the student may then form his own. This mode of treating the subject is not adapted to the wants or the capacities of very young pupils.

To examine critically the earliest written specimens of a language is not generally considered to be the proper study for beginners; nor is the usual superficial and inexact perusal of the Homeric writings attended with any advantage to the student.

Instead of contemplating in these venerable relics of an unknown age, the language of a people who listened with delight to their national songs, the pupil is taught to imagine a poetic language, to speak of a mixture of dialects, and to explain the forms of ancient words by recurring to grammatical fictions. The stamp of true and genuine antiquity is defaced by the various processes of apocope, epenthesis, pleonasm, and other tricks of the trifling etymologists of ancient and modern times.

It is true that the general interpretation of the *Iliad* and *Odyssey* is not very difficult, though perhaps there are some passages which are still translated in a traditional and incorrect manner. These poems often delight us by the beautiful simplicity with which the striking objects of nature are depicted: the illustrations and comparisons are drawn from realities, which in a similar country or climate appear the best that could be chosen, and even in these remote and less favoured regions can generally be felt and comprehended.

But many separate words present difficulties; the meaning of some is obscure, and that of others absolutely unknown; the forms of some well-known words differ materially from those used by the writers of Athens, which in many instances are presented to us in abbreviated or al-

tered shapes. In the forms and terminations of some Homeric words we recognise distinct marks of relationship to those found in the kindred languages of Europe and Asia; and we may thus approximate, by comparison or analogy, to the probable meanings of many obscure terms. The imperfect knowledge of the teacher may here receive assistance from the acquirements of his learned associates; and this is an advantage to the pupil, whatever may be the object of his pursuit, which can only be enjoyed in literary communities.

The history of the critical labours of the Alexandrine philologists, with some estimate of their value, and remarks on the later writers of the Greek hexameter verse, will belong to this part of the course.

When the Greek classes have made such proficiency, that all the ordinary difficulties in the language are overcome, there will remain to exercise their diligence and judgment the subjects of higher criticism, both in philology, geography, historical inquiry, and other connected matter.

The instruction at first will be principally carried on by lessons, as they are generally called: the students will come prepared with a certain portion of each author, and they will be examined on every part of it in the usual manner. They will hear remarks made, have questions proposed, or perform other exercises that may be thought necessary.

Part of the time occupied in instruction will always be devoted to some examination of the preceding day's subject, for the double purpose of removing difficulties and detecting inattention.

Two modes of instruction will be combined when the class can read Greek with ease: part of the time will be occupied by the Professor's prelections, which will be applied to the explanation and the criticism of a portion of the more difficult Greek writers.

They will be adapted both to the uses of the class, and of others of a more advanced age who may wish to peruse

a Greek writer. The regular students will afterwards be examined on the same portion of the author which was illustrated; and they will be required to translate, and explain fully, both the more difficult passages and the easier parts which were slightly passed over in the prelections.

Such a plan appears to present advantages for the acquisition of the Greek language: it will increase the labour of the Professor; but it will tend to the general advantage of the classes, by bringing him occasionally before those who are more competent to judge.

The instruction that will be given to the classes at the opening of the University may not be exactly that which some will expect or wish: but it is necessary to adapt it to the acquirements of the majority of the Greek students. Those to whom is intrusted the earlier education of youth intended for this University, have now an opportunity of co-operating effectually in improving our public instruction. The respective merits of the different systems of acquiring elementary knowledge, and of the books used for this purpose, they may decide by the unprejudiced exercise of their own judgment, and by actual experiment. The most important part of education, the early part, is perhaps the most difficult: the necessity of improving it is now no longer denied; and the efforts of the present age have already done something towards removing the obstacles of habit and ignorance.

If the system of elementary education were framed with reference to its extension in well directed schools of public instruction, even we of the present day might indulge the pleasing hope of seeing a superior generation rise around us. The neglected or the suppressed energies of many of our countrymen would be roused from their state of inactivity or torpor, and directed to the benefit of themselves and the community.

An intellectual dictator, whose tone of legislation renders the mention of his name unnecessary, has declared that

“ Education is as well known, and has long been as well known as ever it can be.” One of the best female writers of our day has contrasted with the superficial judgment of the *admired modern*, the superior intellect of a *neglected ancient* author.

We believe with Aristotle, that the happiness of the present and the hopes of all future generations depend on improvements in the education of youth.

THE END.

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AN

INTRODUCTORY LECTURE

DELIVERED IN

THE UNIVERSITY OF LONDON,

ON TUESDAY, NOVEMBER 11, 1828.

BY

HYMAN HURWITZ,

PROFESSOR OF THE HEBREW LANGUAGE AND LITERATURE.



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INTRODUCTORY LECTURE.

GENTLEMEN,

THE impressive character of all that surrounds me, where the best hopes, wishes, and meditations of my life, seem at once represented and realized—and where, beyond hope, my labours and aspirations have found a sphere and an object—the importance of the charge consigned to me—the novelty of the situation in which I now for the first time stand before those whose favourable opinion and kind anticipations have placed me in it—my unusedness to public speaking, and even the strangeness of my own voice to my own ears in the silence and *felt* attention of such an audience: all these causes of emotions, that impede the utterance which they excite, and threaten to baffle the wish by its own intensity;—these, in the kind, may have been felt by some of those who have preceded me. But there are other thoughts, other impressions, if not more calculated to agitate the spirit, yet more awful, and of a less transitory force, that I share with none—which I appropriate as my proper burthen, and by the sacred right of gratitude claim as my peculiar privilege. For can I forget—dare I suffer a false delicacy to prevent me from expressing the reflection—that, novel as the situation is to *me*, I myself, viewed in connection with the name and characteristic distinction of my Race, am no less a novelty in this situation! Was it possible that I should not hail the hour, in which I heard my name among the Professors of the London University, as the commencement of a gracious revolution?—as the dawn of a moral sun that rises

with blessings on its wings!—that rises for all, but with especial and more enlivening influence for those who had most suffered from the preceding darkness;—a darkness which divided man from man, and made him cling to every distinction, to every accidental difference of birth and opinion, rather than to that which alone should distinguish rational creatures—their intellectual powers, and the moral uses which they make of them! Could I feel it other than as an almost overwhelming felicity, that I could regard my own election as a sign and pledge of the fulfilment of the auspicious promise, that the differences in the *degree* of those qualities, which, in kind distinguish man from the brute, *Reason*, I mean, and the *will* in harmony with *Reason*, should alone and exclusively be allowed to distinguish man from man? It is not possible that such thoughts should be absent from my mind on such an occasion. Utterly impossible, at this moment, when as my eye glances along the circle of my audience, I recognize so many friendly countenances that sympathize in my emotions, and seem to *demand* from me the expression of their gratitude, and their triumph, as included in my own:—men who stand here as the representatives of the thousands and the tens of thousands, to whom this day will be as the announcement of glad tidings, that the temple of truth is opened—that the gates of *liberal* and *liberalizing* science are thrown wide open—and that beneath this sacred roof are dispensed, with impartial beneficence, the sure means of that equality, which, disturbing no rank, elevates all—and of that respectability, of which wealth may be an ornament, but cannot be the substitute.

Under the confluence and combined action of such recollections, of such prospects, it will be forgiven me if I seek to escape from the crowd of feelings, my words are inadequate to express,—if I take shelter from my own emotions by an abrupt transition to the subject which my present address is

meant to introduce, and to that department of knowledge, which, under circumstances not less flattering to my nation than honourable to myself, has been consigned to me, as Professor of the Hebrew language in this University.

It is the fortunate peculiarity of the study in which it will be my duty to act as guide and pioneer, namely, a fundamental and critical knowledge of the Hebrew Language and Literature, that the largest and most important portion of the materials, to which I must refer as authorities, and from which I must derive my examples and illustrations, possesses for all students who now hear me, or who are likely to study the language under my guidance, a common interest; and that no term of veneration or respect can be applied to these writings, as to which I may not safely rely on a common sympathy. It may well, I repeat, be regarded as a singularly fortunate circumstance, that although throughout the far greater, more interesting, and more fruitful part of our route, I move over sacred ground, I am yet at the distance of centuries from even the nearest boundary line of the *debatable* land,—any incursion into which, in my character as Teacher of Language, I should regard as mere wantonness, to hazard at any time; but here, within these walls, as little less than profanation,—profanation equally of the *place* and of the *subject*. For both are united in one most interesting respect, both alike may be represented by one and the same symbol or emblem; even the Oak at Mamre, planted according to ancient tradition by Abraham, after that *passing* from *over* the Euphrates, which, according to the most probable Etymology, gave the name *Hebrew* alike to his language, and his legitimate descendants. That famous and sacred tree, which *Sandys*, in his *Travels in the Holy Land*, speaks of, as then still existing, and under which, he relates, that on one yearly day of festival pilgrims of all the nations of the Hither East, and professors of all its different creeds,

assembled in peace and concord. There, under the shade of its wide-spreading branches they met as brethren under the tent of a common parent, forgetting or suspending all differences in their love and veneration of that, in which all agreed—met around the massive trunk, as a living monument dedicated to common recollections and mutual respect, inspired by the *Numen Loci*, the genius of the place. Alas! from the reign of the first Charles, in which this amiable poet and traveller flourished, even to our own days, by how many has this pleasing narrative been perused with a sigh, as a poetic fable, a pleasing allegory, the expression of a humane wish in the disguise of a pretended fact? Thank Heaven! it is no longer so; the emblem is realized; the fable, if a fable it be, is become fact: nor need we cross the seas to find the confirmation. The Oak of Mamre exists; and we are now assembled beneath its protecting shade;—and hushed be every sound, that, even for a moment could interrupt the harmony that celebrates the era of its replanting.

In my individual character, in a proper time and place, there is no man more ready or more disposed than myself to vindicate the decision of ages respecting the origin of the writings from which alone the Vocabulary and the Syntax of the Hebrew language can be safely derived. Nay, I will for once and all go further, and here avow, that if there be one motive stronger than all others for satisfaction in the attainments and distinction with which my studies and strivings after knowledge have been rewarded—if there be one motive more operative on my feelings than any other, for wishing that these attainments had been far greater, it is the power of affording one additional proof, that religion has nothing to fear from knowledge, but every thing to apprehend from that pusillanimous yet tyrannic *ignorance*, which can only preserve itself by the exclusion of light.

This, I say, would be my conduct in the proper time and

place; but at present, and in this place, I appear as a Grammarian, and Philologist; the teacher, indeed of one language only, but this a language which more than any other is calculated to disclose and exemplify the philosophic principles on which all languages are grounded, and without which grammar would sink from the rank of a science to a mere arbitrary arrangement of conventional signs.

The possession of a glass bee-hive enables the naturalist to understand the processes and structures carried on more obscurely in the thatched apiaries of the cottage. Such is the aid which a thorough insight into the construction of the Hebrew lends towards an intelligent knowledge of more complex languages, or (to speak accurately) of languages in which the origins and primitive forms are more disguised. This, and this alone is my sphere, and this is more than commensurate with the most ample knowledge, the most active intellect,—how much more than sufficient for mine!

But it is time to return to the Oak of Mamre, from which I drew my illustration, and which has this advantage, that it brings me back to the main subject of my address, at least to the first of the three heads under which I mean to treat it: namely, the antiquity of the Hebrew language and its history; 2ndly, the importance of the study of the same, both in respect of the uses it possesses in common with other ancient tongues, and of those to which it may prefer a peculiar claim; 3rdly, the necessity of its thorough attainment, on sound and philosophic principles, purified from those superstitious and fantastic fopperies, with which, beyond all other languages, its attainment has hitherto been impeded and hampered. The necessity, I say, not indeed *to* all, but *for* all—that is, for purposes in which the welfare of *all* is involved. And I shall conclude with a few practical reflections, which the institution of a Professorship for these purposes has suggested, and, I may say, forced on my mind.

The Hebrew language derives its name from the *Hebrews*, as having been during a long period their vernacular tongue, and as that in which their antiquities, laws, and history, were and are still preserved.

The Hebrews themselves, as far as we can learn from their own history, date their origin from Abraham, who is the first that is distinguished in their ancient records by the name of *הֵבְרִי* 'the Hebrew.'

The learned are not agreed respecting the etymology of this name. Some assert that Abraham assumed it as being a descendant of *עֶבֶר* *Eber*, the great grandson of *Shem*, who is emphatically called *אָבִי אֶל־בָּנָי עֶבֶר* *The father of the sons of Eber!* Others assert that he was thus denominated because he originally came *מֵעֵבֶר הַנָּחַל*, *From beyond the Euphrates*. I am inclined to prefer this opinion, as there appears no reason why Abraham should have adopted the name of *Eber* rather than any other in the list of his ancestors: unless we admit an ancient tradition, that both *Shem* and *Eber* had migrated with part of their family into Canaan long before Abraham.

The learned *I. D. Michaelis*, in his well-known work, '*Das Mosaische Recht*,' has adopted a similar opinion. And as it is well known that the ancients frequently gave significant names to their children, in order to commemorate particular events, it is probable that *Eber* (*עֶבֶר*) himself might have been thus denominated, from this very circumstance, (*עֶבֶר* being derived from *עָבַר*, which signifies 'to pass over,' e. g. a river, &c.) in the same manner as his son *Peleg* (*פֶּלֶג*) received his name, to commemorate another great event which happened at that remote period.

Be this as it may, it is certain that none but the Israelites are mentioned in Scripture by the name of Hebrews, by which denomination they were chiefly known to the surrounding and foreign nations, and hence it was transferred to their language.

In the ancient records, the epithet *Hebrew*, as applied to the language, does not occur. We are, therefore, uncertain by what name it was known in the earlier ages, or at the time when Israel formed one united kingdom. But soon after the state had been split into two, and particularly after the destruction of the kingdom of Israel by the Assyrians, the Hebrews became more generally known by the name of יְהוּדִים; from יְהוּדָה the dominant tribe; and hence the language was distinguished by the name יְהוּדִית, *Judaic*, or *Jewish*, by which denomination it is mentioned in the book of Kings and in Nehemiah.*

At a still later period, when the Hebrew was exclusively confined to the service of religion, it received the name of לְשׁוֹן קֹדֶשׁ *the holy language*. By this name we find it mentioned in the Mishna.† Innocent as this term was in its origin, it yet gave rise to numerous errors and misconceptions. From that mistaken zeal, which too often excuses fraud by the presumed piety of the motive, or as an inducement to the people to make the Hebrew the medium of prayer, it was asserted that the angels preferred this language to every other, nay, that it was the very language that God had taught our First Parents, though Moses expressly attributes the imposition of names to Adam, and only intimates that God had endowed him with a soul capable of forming thoughts, and with organs capable of uttering articulate sounds which he might use as the signs of mental conceptions, and that he had placed him under circumstances best fitted to excite these capabilities into act: even as the same wisdom infused the germinal and distinctive form in every seed after its kind, and assigned to each its befitting place and circumstance; but left it to the sun and the breeze,

* 2 Kings, xviii, 26. Neh. xiii, 24.

† Mishna, Tract, Sota. See also Pseudo Jonathan, Genesis xi, 1—xxx, 47; and Jerusalem Targum, xxxi, 2; where it is called לְשׁוֹן יְהוּדִית

to the protecting earth, the nourishing dews, and the exciting warmth, to aid and effectuate its full development.

Thus the sacredness due to religion was transferred to words and empty sounds, and from sounds even to the bare letters. Imposture soon took advantage of Credulity, and pretended, by the force of a few Hebrew words, to produce the most extraordinary effects; nay, by barely writing a few Hebrew characters on a bit of parchment, to cure all manner of diseases: and it was long before even the *learned* became convinced, that there can be nothing sacred either in sounds or visual characters, save the holy thoughts they convey.

To this peculiar term (לְשׁוֹן חֵן) or at least to the misconceptions arising from it, we may, in a great measure, attribute the many strange opinions and fanciful schemes of some of the learned respecting this ancient language: as for instance, that unphilosophical opinion which supposes that Hebrew words express the nature of things; as if it really were possible to express the nature of things by single words. Such also, was the still stranger notion of *Caspar Neumann*, that the Hebrew letters express or represent the most abstract notions of time, motion, space, magnitude, &c.; as, for instance, that א *Aleph* is the emblem of *primary motion, origination, and activity*; ב *Beth*, of *space, capacity, &c.*; ג *Gimmel*, of *flexion*; ד *Kaf*, of *concavity, &c.* as if the inventors of language had been scheming philosophers, or as if letters could have been invented before the sounds of which they are only the representatives. Lastly, may be mentioned the fancy of the younger *Helmont*, that the Hebrew letters represent graphically, that is, give the very outline and portraiture of the organs of articulation, as the eye would see them in the very act of giving utterance to the sounds. And accordingly, in the engraving prefixed to his work, there is a portrait of the author, representing him as standing before a looking-glass, with open mouth, and with a pair of compasses in his hand, with which he is apparently measuring his throat.

There is an old and homely proverb, "that it is an ill wind which blows no good," and in this strange fancy of the younger *Helmont*, as in the still wilder dreams of the old Alchymists, we have a consoling instance of practical wisdom and useful discoveries resulting, by accident, from folly, and the rank growth of idle brains. On this most fanciful hypothesis *Helmont* grounded the first feasible, though imperfect art of teaching the deaf and dumb; for which the work and the author were strongly commended by the celebrated *Leibniz*; and this eventually gave rise to the improved plans that have called forth the hidden soul from darkness, and given the light and vital air of mutual inter-communion to thousands, who otherwise would have remained incarcerated, by force of inapt organization; sadly realizing the fable of *Polydore*, so pathetically described by the *Mantuan Poet*. (*Æneid* B. iii.)

I wish that equally favorable results could be related of the preceding follies, to which their authors had been seduced by too great a veneration for the Hebrew language, or rather a misplaced veneration for the sounds of the sacred writings, which, applied to their sense, could scarcely have been too great.

Whether the Hebrew was the primitive language of mankind, whether it was the mother or only the sister of the Chaldee, Arabic, and other Semitic dialects, are questions, which have agitated the learned world for centuries. It is not for an individual like me to decide between the contending parties. And, indeed, until sound philosophy shall have ascertained *a priori*, the essential points which ought to characterize an original language—and by comparing ancient languages, and taking into consideration the circumstances under which they were formed, shall have determined which of those languages approximates nearest to pre-established principles—no satisfactory answers can be expected to questions of so difficult and complex a nature.

Without, therefore, any wish to prejudge, or to decide the question, I may be allowed to express my opinion, that a careful perusal of the Pentateuch would incline an impartial reader to infer that the sacred Historian himself considered the Hebrew as the primitive language of mankind. For, independent of the names contained in the genealogical tables of the 4th and 5th chapters of Genesis—names which are evidently of Hebrew origin,—Moses gives us numerous other words, with the reasons of their denomination, which cannot be traced to any other language than the Hebrew. Thus, for instance, Adam called the woman אִשָּׁה (*ish-sha*) because she was taken from out of אִישׁ (*ish*) *the man*. (Gen. ii, 23.) Eve called her first son קַיִן *Cain*, (a term somewhat equivalent to our word *gotten, obtained*,) because she said קָנִיתִי (*kanithi*) ‘*I have obtained a man from the Lord.*’ (Gen. iv. 1.) She called another of her sons שֵׁט *Seth*, which signifies *replaced, granted*, because she said שָׂתַלְתִּי לִי אֱלֹהִים ‘*God has replaced, or granted me another seed instead of Abel.*’ (Gen. iv, 25.) Lamech called his son נֹחַ *Noah*, which signifies *ease, comfort*, because he said,—‘*This one יְנַחֵםנו shall comfort us,*’ &c. (Gen. v. 25.) Thus, also, Lot’s daughter named one of her sons בְּוֹנֵן from בָּן the Hebrew word for *father*. (Gen. xix, 37.) And Leah called her first-born son רְעֻבֵן *Reuben*, because she said רָאָה יְהוָה בְּעַצְבֵּי ‘*The Lord looked upon my affliction.*’ (Gen. xxix, 32.) The same is the case with numerous other names of persons and places. Now, in all these terms, there is evidently a close resemblance between the denominations, and the words from which they are derived; but this analogy is entirely lost if we translate the words into even the cognate dialects: thus, for instance, the corresponding words to אִשָּׁה and אִישׁ are in the

Chaldee אִשְׁתָּא and בַּעֲלָא, or גְּבִרָא

Samaritan אִשְׁתָּא גְּבִירָא

Syriac |ܐܝܫ| . . . |ܐܝܫܬ|

In Arabic, the analogy in these two words is indeed preserved, as *امرأاة* but then it fails in others, as *زرق* and *قايين* &c. ; and hence we can come to no other conclusion than that the above-cited words belong to the Hebrew, and consequently, that the author of the Pentateuch must have regarded the Hebrew as the primitive language of mankind.

It is true, that, considering the changes to which all languages are naturally subject, it may seem difficult to conceive how the Hebrew could have continued unchanged during so long a period, but the difficulty stands or falls with the fact that is here (in my opinion without sufficient grounds) taken for granted but not proved ; for in what place in the Pentateuch is it distinctly stated that the Hebrew had not undergone any change ? That the roots of the proper names remained distinguishable, is no proof that the language may not, in other respects, have undergone many and considerable changes.

It is highly probable, that the Hebrew, in its infant state, consisted entirely, or at least mostly, of words of one syllable, and that it only assumed its artificial state in the process of time. Many words of prime necessity retained their original form : such as, for instance, *אב* a father ; *אם* mother ; *בן* a son ; *אח* a brother ; *יד* the hand ; *פה* the mouth ; *שן* a tooth ; *אור* light ; *אש* fire ; *עץ* a tree ; *פרי* fruit ; *קול* the voice ; and numerous others. These and the like, are real primitives ; for, to suppose them derived from the imaginary trilateral roots, under which many Lexicographers have placed them, would be just as reasonable as to suppose (to use the words of *Adelung** and *Klaproth*†) that the child existed before its parent.

Indeed, whoever attentively considers the language as it is presented to us in the Pentateuch, can come to no other conclusion, but that many ages of cultivation must have

* See *Adelung's Mithridates*.

† *Observations sur les racines des langues Sinitiques* par M. Klaproth.

elapsed before it could have attained so high a state of perfection: and this is in itself a strong proof of its great antiquity.

The affinity which still subsists between it and the Chaldee, Arabic, and other Semitic dialects, after the lapse of so many thousand years, makes it highly probable that they were once *one* and the same language; and that there was a time, when the whole of the then civilized world had, as the Sacred Historian tells us, שִׁפְחָה אֶחָת, 'one lip,' i. e. *one language*, וְיִדְבָּרִים אֶחָדִים * 'and the same words,' that is one idiom.

That the Hebrew and the Phœnician were one and the same language, is not only evident from several Phœnician remains, and from many words preserved in profane authors, as Ἀδωνις אֲדוֹן *the Lord*; Ζωφασαμην צופי שמים *the Heaven-gazer*; Στυς צדיק *Just*; Melicartus מלך קרתא *King of the city*; Hannibal חַנְיָ בַּעַל *the grace of Baal*; Hasdrubal עֲזָרִי בַּעַל *the assistance of Baal*; but also from the numerous names of persons and places mentioned in various parts of Scripture, such as אֲבִימֶלֶךְ *Abimelech*, which signifies *a father of the king*, or *chief king*; מֶלֶךְ צָדִיק *the just king*; שֵׁנִי *the generous*; אֲדֹנֵי צָדִיק *the just Lord*; אֶרְבַּע הַגִּבּוֹרִים *The city of Arba, or the city of the four giants*; צֹר (Tyre,) *a rock*.

This is still more evident from the 11th verse of the fiftieth chapter of Genesis, where we are expressly told that a particular place was called אֶבֶל מִצְרַיִם 'Abel-mizraim', *the mourning of the Egyptians*, because the Canaanites, the inhabitants of the land, said, when they saw the funeral procession of Jacob אֲבֵל־כָּבֵד זֶה לַמִּצְרַיִם 'This is a heavy or grievous mourning to the Egyptians.'

Besides this, Isaiah expressly calls the Hebrew שְׂפַת כְּנַעַן *the language of Canaan*. All this shows that the Phœnicians

* Gen. xi, 1.

and the Hebrews spoke one and the same language. And hence we may infer, that it was a rich and a highly cultivated language in ancient times.

The poetry of the Hebrews fully proves this. Here we find no want of words, no lack of expressions. And, indeed, this very poetry required a greater abundance of words than the poetry of other nations, because one of its essential characteristics is *parallelism* of various sorts; and one of these, is what *Bishop Lowth* has very properly denominated *parallel synonymous*. It consists in expressing a sentiment or thought in one line, and repeating the same sentiment in the following line, in varied, though nearly equivalent terms.

By way of illustration, let us take that little poem, which is the most ancient on record, and which Moses attributes to an antediluvian poet. It consists of six lines, and begins after the words 'And Lamech said to his wives, (Gen. iv. 28.)

עָדָה וְזִלְלָה שְׁמַעְנָן קוֹלִי
נָשִׁי לָמֶךְ חָאוּנָה אִמְרָתִי
כִּי אִישׁ חָרַבְתִּי לַפָּעַעִי
וְיָלֵד—לְחִבְרָתִי
כִּי שִׁבְעָתַיִם יָחַסְתָּנוּ
וְלָמֶךְ—שִׁבְעִים וְשִׁבְעָה :

Adah and Zillah, hear my voice,

Wives of Lamech, give ear unto my speech.'

Here עָדָה וְזִלְלָה *Adah and Zillah* of the first line correspond with נָשִׁי לָמֶךְ *Wives of Lamech* in the second line; שְׁמַעְנָן *hear*, with חָאוּנָה *give ear*, and קוֹלִי *my voice*, with אִמְרָתִי *my saying or speech*. The next four lines are constructed on the same plan, and so are numerous other Hebrew poems, only diversified. This, of course, required a great number of equivalent terms and varied expressions. The language must, therefore, have been rich.

That it is poor now, cannot be denied; nor need we wonder at it, since it is well known that we possess at present only

the wreck of an extensive literature. The numerous books mentioned in Scripture, such as סֵפֶר מִלְחָמוֹת ה' 'The book of the wars of the Lord,' סֵפֶר חִישָׁר 'The book of Jasher,' דְּבָרֵי שְׁלֹמֹה 'The words of Solomon,' דְּבָרֵי נָתָן הַנָּבִיא 'The words of Nathan the Prophet,' דְּבָרֵי גַד הַחֹזֶה 'The words of Gad the Seer;'—(with, doubtless, numerous other oracles,)—all the larger Chronicles of the kings of Israel and Judah, of which those we possess are mere extracts; all these works are lost—irrecoverably lost. What wonder then, that the language appears poor. But poor as it is now, it is a poverty, that in its very remnants bears witness of its former opulence.

Having thus proved the great antiquity of the language, I proceed to say a few words of its history.

Languages, like human beings, are said to have their different stages of existence; their infancy, youth, manhood, and their decrepid, yet garrulous old age. In languages of comparatively modern formation, these stages may be pretty accurately marked; but not so with respect to the Hebrew. Here we can only discover *manly vigour* and *declining age*.

In the Pentateuch we find the language already in the highest state of improvement it ever attained. In this most ancient of all books, we have already the two great divisions of style—prose and verse—distinctly marked, and formally recognized; and what is not less remarkable, the *Prose* constitutes the far larger portion of the work. And permit me to observe, that the intellect and intellectual cultivation of a people must have already reached an advanced point, who possessed a language of facts, or simple Historic narrative, and at the same time a language of the Imagination, often conveying the same facts as the former, but as contemplated in moments of high emotions and excited Fancy; and each of these languages subsisting apart from each other, and enjoying its own special character:—an

advantage this, which the Greeks had but imperfectly attained, even so late as the age of Herodotus.

The golden age of the Hebrew language began with Moses, and continued, with little variation, to the end of the reign of *Hezekiah*. It was during this long period, that Hebrew literature arrived at its most flourishing state. The song of *Deborah*, and the prayer of *Hannah*, show, that even in times of anarchy, the Israelites neither neglected their language, nor,—and I would particularly draw your attention to this, as a forcible and demonstrative proof of high cultivation—the Education of their Daughters. It was even during these disturbed times, that the Schools of the Prophets were established. It was during this golden period of the language, that the Royal Bards of Israel struck their Harps, and the eloquent Prophets of the Hebrews poured forth those energetic and manly Orations, which have been, and ever will be, the admiration of ages.

After the death of *Hezekiah*, when the Assyrians and the Chaldeans made frequent inroads into the land, the language began sensibly to decline.

Jeremiah is not, indeed, deficient in poetical beauties; but he wants that majesty, elegance, and purity of diction, which characterize *Isaiah*, *Joel*, *Habakkuk*, and other ancient prophets. In proportion as the state declined, so did the genius of the language: till at last, when the nation was plucked up from its native soil, and transplanted into a foreign country, Judah's sweet-toned lyre was struck dumb; Sion's sacred minstrels hung their harps on the willows; and when their spoilers asked them to sing the festive song, they emphatically exclaimed, יֵהְיֶה עַל אֲדָמָת נֶכֶד, אִיךָ נִשְׁרָא אֶת שִׁיר יְהוָה? * *'Ah! how can we sing the Lord's song in a strange land?'* The vanquished gradually exchanged their own venerable tongue for that of their vanquishers; and the Hebrew

* Psalm cxxxvii.

rapidly approached its dying days. The lamp of prophecy was not entirely extinguished; but it gave only a dim light: it was surrounded with a thick oppressive atmosphere. The last five Prophets still poured forth their Oracles in Hebrew; but it was no longer the pure *classic* Hebrew of their predecessors. In short, the language became more and more intermixed with foreign words and idioms, so that, in the time of Nehemiah, the bulk of the people had entirely forgotten the language of their ancestors; and had not Providence raised an Ezra, and inspired him with a holy zeal for the Religion of his Forefathers, the Sacred Writings might have been irrecoverably lost.

The Israelites justly consider Ezra as the restorer of their religion, and the preserver of their Holy Law. Nor must we omit *Nehemiah*:—this truly pious patriot, who, amidst the dazzling splendour of an Eastern Court could still drop a tear for the shattered walls of Jerusalem, and weep for the forlorn condition of his Country;—who, although Cup-bearer to the Persian monarch, and enjoying great consideration, and dignified office, did not forget his distressed brethren; but sacrificing ease, and comfort, and honours, hastened to their relief, and re-animated their drooping spirit. He it was, who, together with Ezra and other eminent men, first introduced the custom of reading the Law in public, and of interpreting it to the people, who soon learnt to appreciate its value, and to practise its invigorating lessons; and the consequence was, that *idolatry* was for ever banished from amongst Israel. Thus did these pious men labour for the benefit of their nation, and thus they laid a sure and solid foundation for the revival of learning. This was all that circumstances permitted them to do. The people had already adopted the Chaldee as their vernacular tongue; and the Hebrew became what it has ever since been, a dead or learned language.

A new epoch now commences in the history of the language, which my limited time will not permit me further to pursue. I shall therefore only briefly remark, that ever since that period, the Hebrew continued to be cultivated amongst the Jews with more or less success, in proportion as they were more or less persecuted;—that it was transmitted traditionally from generation to generation, until the beginning of the tenth century of the present era, when Rabbi Saadiah, the celebrated author of the Arabic version, wrote the first grammar of the Hebrew language. He was soon followed by other learned Israelites, who, during that and the following four centuries, distinguished themselves, not only in grammatical learning, but in every other department of knowledge. The names and works of *Jehuda ben Karish*, *Menacham ben Serug*, *Jehuda ben Chiuig*, *Jonah ben Ganach*, *Solomon ben Gebirol*, *Jehuda Hallevi*, *Jarchi*, *Aben Ezra*, *Maimonides*, *Joseph*, *Moses*, and *David Kimchi*, *Nachmanides*, *Aben Sid*, *Abarbanel*, *Elias Levita*, and many others too numerous to be named, are all well known to the learned.

Indeed, this was the golden age of Rabbinical Literature. The Jews of Spain, in particular, devoted their minds to Philosophy, Medicine, Mathematics, and Astronomy; and it is well known that they greatly assisted in keeping up the lamp of science, during the ages of Gothic darkness. They made astonishing progress in every branch of learning, until in the year 1492, a bigoted king, incited by a brutal and ignorant priesthood, who dreaded the light of science, plunged half a million of human beings into misery and despair, and almost extinguished the mental light of Israel.

Excepting Origen in the second, and Jerome in the fourth century, very few Christians could boast of a considerable knowledge of the Hebrew before the beginning of the sixteenth century. *Reuchlin* was the first that led the way. He was followed by a few others; but the prejudices of the

times, joined with the prevailing ignorance, prevented the general diffusion of Hebraic learning.

We may form some idea of the ignorance of even the Clergy of those days, from an anecdote which *Conr. Heresbach* relates in his work (*Orat. de laudibus Literar. græc.*). He states that he had heard a monk announce from the pulpit to his audience "*Man hat eine neue Sprache aufgebracht, die heisst die Griechische, vor dieser hat man sich sorgfältig zu hüten: sie veranlasst lauter Ketzereyen. Hier und da haben auch die Leute in dieser Sprache ein Buch das N. T. genannt. Dieses Buch ist voll Steine und Ottern. Es will noch eine andere Sprache aufkommen,—die Hebraische;—die diese lernen werden Juden.*"—They (I suppose the heretics) have introduced a new language, which is called the Greek: this must be shunned. It occasions nothing but heresies. Here and there these people have a book in that language called *the New Testament*. This book is full of stones and adders. Another language is starting up, *the Hebrew*. Those that learn it are sure to become *Jews*.

However, soon after the Reformation had slackened the cords of mental bondage, the importance of the Hebrew began more and more to be felt. Since that period it has struck deep root on Christian ground. Cultivated by men of rare talents, it soon grew up and flourished, and I rejoice to say, it continues to do so. Pity it is, that it grows rather too luxuriantly, and wants now and then a little pruning.

To mention the names of the eminent men who wrote on this language in various parts of Europe, would take up more time than my limits will allow. To Englishmen, however, it must always be gratifying to know that a Selden, Pocock, Lightfoot, Walton, Castell, and Lowth, adorn the list of distinguished names in the annals of Hebrew Literature.

I now proceed to make a few observations on the importance of the language. Considered merely as an ancient tongue, the Hebrew claims the attention of the learned;—of the general scholar who wishes to enrich his mind with knowledge of various sorts;—of the philologist, who delights in comparing languages, in order to discover their affinities, and to trace words to their elements;—and of the philosopher, who would fain dive into the almost mysterious nature of human speech, and discover its first source. But what adds to its importance, is the character and value of its Ancient Literature.

It is acknowledged on all hands that the Hebrew Records are the oldest documents we possess, and that they contain information which we can derive from no other source. They alone give us a rational account of the origin of things and of the primitive state of mankind. They give us a faithful picture of ancient manners, and the most accurate statement of the gradual rise of nations. In them, all human beings are represented to proceed from a common parent. In them alone the dignity of the human character is asserted and maintained.

But this is not all. No other books whatever have had such an influence on the minds of men, and on the moral character of nations. Wherever they have been read, they have awakened a spirit of inquiry highly favourable to the advancement of science. Wherever they have been read, they not only made their readers acquainted with their *duties*, but also with their *rights*;—but let it be observed with their *rights* as consequent on the performance of their *duties*. And it may safely be asserted, that no people thoroughly acquainted with the contents of the Bible can ever remain enslaved.

To understand these books must therefore be an object of prime importance to *all*, but particularly to the spiritual guides and instructors of the people. And how is this to

be done without a knowledge of the language in which they are written? By Translations, it may be said :—and true it is that we possess many good Translations. But the Translations are known to differ on many important points, and how can we possibly know which of them is correct, unless by an appeal to the Hebrew text? Besides, no Translation, however excellent, can convey the spirit of the Original. Permit me to illustrate this by an example:—

The basis of Scripture morality is expressed in Hebrew in three words, viz. *וְאָהַבְתָּ* and *thou shalt love*, *לְרֵעִי* to *thy neighbour* (or rather thy fellow-creature) *קָמוֹץ* as *thyself*. The same phrase is used in Leviticus xix, 34, where the Holy Law enjoining the Israelites not to vex the stranger, but to consider him as one born amongst them, adds, *וְאָהַבְתָּ* and *thou shalt love*, *לֵהּ* to *him*, *קָמוֹץ* as *thyself*. Now it is very remarkable, that the verb *אָהַב* to *love*, occurs above two hundred times in the Hebrew Records, in every instance of which it is either followed by the particle *אֶת* the sign of the objective, or by a pronoun in the objective case. In the two before-cited verses alone, it is followed by the dative (*לְ* to). Can this be merely accidental? Surely not. The sacred writer evidently wished to make a distinction between the love of affection, which is often accompanied by selfishness and partiality, and that of our neighbour, which was to be a moral act. The former is but a manifestation of a pre-existing impulse, the contracted current of a stream which had been flowing under ground, and only by its rising into light attains the appearance of a fresh spring or fountain—while the latter is a *free act*, having its proper origin in the *free will*, determined to the act by the idea of a *Universal Father*. This then is the reason, why the words in both instances are accompanied by the dative case; as both were to be *moral acts*, flowing as it were from the mind *לְרֵעִי* to *thy neighbour—to the stranger*.

This is also the reason why both injunctions are accompanied by the words **אני יהוה** "I am the Lord," the Universal Father; that is to say, I am the Merciful Father of you all;—ye are all my children.

This example, to which numerous others might be added, proves that it is as impossible to transfuse the spirit of the original into any Translation, as it is to understand the original language of Scripture without first learning its elements.

To these elements it will be my duty to direct the attention of the students in the first instance. The methods of instruction which I shall adopt will be those that are found so useful in the acquisition of knowledge in general, namely, to proceed from the known to the unknown,—from the simple to the complex; to analyze or resolve every compound into its simple constituent parts, and to combine theory with practice.

The Hebrew indeed, in common with other Oriental languages, having been formed and grown up under a different sky, amidst different scenes and modes of life, must naturally have characteristics and peculiarities which distinguish it from European languages. But since all languages are but so many copies taken from the same original—the human mind—it follows that, notwithstanding the peculiarities of each, there must be many points of resemblance between all. On these points I shall endeavour to seize, and thence proceed to point out the difference.

Above all it will be my most anxious wish to direct the students' attention to what the author of "*The Friend*," and of the "*Aids to Reflection*"—a gentleman whom I am both happy and proud to call my friend—and where is the man who knowing his vast learning, genuine piety, and goodness of heart, that would not be proud of his friendship!—so justly calls the Science of Words.

Allow me to illustrate this by a few examples with which I shall close this portion of my Lecture.

There are in Hebrew many words deemed Synonymous, that is, different words having the same signification, and others (Homonymous) of which, apparently, each word has a variety of meanings. But on strictly examining them, we shall find the former express, indeed, generally the same leading idea or conception, but yet not without considerable modifications; and the latter, though apparently they denote different things, yet in point of fact, mostly express the same conception, or image presented to the mind by various objects, however different those objects are in their nature.

As an instance of the first class we will take the several words which the Hebrew has for *rain*, namely, שָׁעִיר, מָטָר, גֶּשֶׁם, יוֹרֵד, מִלְקוֹשׁ, רָבִיב. Here we have six terms expressive of one thing, and yet they are not identical terms. For גֶּשֶׁם is the generic term for *rain*; יוֹרֵד signifies the *early rain*, or that which in Palestine falls about November and December; מִלְקוֹשׁ denotes the *latter rain* or that which falls in the same country about March and April; מָטָר from מָטַר *a row*, denotes that *rain* which descends as if it were in regular rows; שָׁעִיר from שָׁעַר *the hair*, indicates that rain which descends in small particles and fine drops; and רָבִיב from רָבַב or rather from רָב *much, great*, denotes that *rain* which descends in large drops, as we often see in thunder-storms or heavy showers.

My limited time will not allow me to elucidate this subject, but if the students will, at their leisure, apply this explanation to the 2nd verse of that inimitable Poem of Moses, which begins with the words תִּשְׁמַע יְהוָה "Give ear, O ye Heavens," where the last three terms for *rain* are made use of, they will find there a propriety of expression, and a beauty of diction, which no translation can convey.

As an example of the second class of words we will take the word שְׁלוֹם which is rendered by *Health, Peace, Prosperity, &c.* But the leading idea expressed by the Hebrew word is—*The EFFECT produced by the harmonious co-operation of diverse powers, all tending to one and the same END.* Now the *effect* of this equilibrium in the human body we call *Health*. The same effect in the social body, such as a family, a nation, or the family of nations, we call, *Peace*. In reference to these and their external circumstances we call it *Prosperity*. Lastly, that happy balance between our intellectual and physical powers, the Hebrews still express by their word שְׁלוֹם. And this is probably what the prophet Isaiah meant when he said וְהָיָה מִצְדָּקָה שְׁלוֹם ‘And the product of righteousness will be שְׁלוֹם *Peace*,’ or health of mind and body, the highest of human bliss.

And now let me be permitted to distribute, in my mind’s eye, the whole number of those for whom the Institution of a Hebrew class in the London University may have an immediate interest, into two ranks, and under this impression, to address a few remarks to each.

The first division comprises those whose views are principally, if not exclusively, directed to the ancient or Biblical Hebrew, and who are desirous to acquire a grammatical and critical knowledge of it, for the best and noblest purpose, that of duly qualifying themselves, as accredited labourers in the service of Religion and Morality; and to avail themselves of the manifold forces, supplied by, what the experience of ages will justify me in characterizing as the great *lever* of civilization. Now to students thus destined, I would observe, that of these Venerable Writings there are two modes of interpretation. Of the tenability and legitimacy of that, which I shall first mention, I give no opinion:—opinions, indeed, are not

my business. Sufficient for my purpose, that this mode has been sanctioned and adopted by learned men, both of the Church and the Synagogue, both in Ancient and Modern times. I have only to state the *mode* intelligibly.

The interpreters according to this mode, contemplating the whole number of the Sacred Writings, from Genesis to Malachi, (or according to a more ancient arrangement, from Genesis to the Chronicles) as one work, penned indeed by different men in a succession of ages, but emanating from one and the same spirit or influence acting in all, and in each part, prescient of the truth, incidents, and events recorded in all that follow. On this ground, they not only interpret the earlier by the later, but contend, that the most important, and enduring sense of the Scriptures, is not always that which possibly might have stood foremost or even singly, in the mind and in the intention of the Penman, or in those of his Contemporaries, but rather that sense, in which *we*, having the whole dispensation in synopsis, as it were, before us, are now enabled to understand them; the whole series of personages and events being at once historical and typical—historic in reference to the immediate time, and at the same time a type, and virtual prophecy of some event that was to succeed. This is the first mode, or as it is usually called, the Theory of Double Senses.

The second mode, without excluding or necessarily questioning the former, contemplates each book by itself, which is to be interpreted, like all other ancient books, by the Philosophy of language, and the combined light of Logic and History;—including in the latter, the known Customs, Opinions, and Institutions of the age to which the Work is assigned. Now the first mode is, I need not say, purely Theological, and as such excluded from my purposes. I mention it therefore, only to remark, that the two are perfectly compatible: secondly,

that the former mode is either rejected or affirmed. If rejected, the other becomes of course the only legitimate mode of interpretation, and consequently of increased importance and necessity. And if affirmed, then I say, that so far from superseding the necessity of the latter, it must, if this could be, *increase* it. For without a grammatical knowledge of the *literal* sense, how would it be possible to appropriate the *typical*? Besides if the typical senses were not circumscribed and fixed by the literal, the result must be, a lawless and arbitrary expression of the interpreter's own fancies in *Centos*, or patchwork of phrases from any and every part of Scripture. The age of the corrupt Cabala would return, and the Dial of Interpretation be read by the moonshine and shadow of a wandering fancy.

The literal sense may be only the *Porch* of the Temple; but it is the porch of the only rightful door of ingress into the Temple itself:—and I present myself with humility, I trust, but not without confidence, to this class of my Auditors, as their guide through the outer court; and, in my highest character, as standing on the steps that ascend to it.

I now turn with an emotion I find it difficult to suppress, to the other imagined—nay, let me say, sanguinely desired—class, and address myself to those of my own denomination, for whom, and for whose children, a scientific acquaintance with the language of their Forefathers must be the basis of all liberal education: unless, which Heaven forbid! that education only should be considered as liberal which is to be purchased at the heavy cost of Principles, Faith, Duty, and all the sacred bonds of Brotherhood, and Common Descent.

Gentlemen!—No Class is more interested in the acquisition of Knowledge and its diffiusion, than you are, because no Class has ever felt the blasting effects of

Ignorance more than you have. It was Bigotry, Superstition, and Despotism—which for the honor of human nature, I would attribute to Ignorance, as the common Parent of this *ferocious* progeny—that drove our Ancestors from their native land, and dispersed them over the wide world. It was *Ignorance*, and her fearful offspring, that inflicted on our Forefathers cruelties so hideous, that even to relate them in detail would be almost to renew them. It was *Ignorance*, that closed against them every path of honorable ambition, and every source of ennobling energy, and aggravated the wrong, by charging them with a groveling spirit; justifying the continuance of their persecutions, by the very consequences of their own previous tyranny; as if the injury could be annihilated by being increased tenfold; and, as if the poor captive ceased to be injured at all, because the iron had entered into his very soul! It was *Ignorance*, I repeat, either directly, or in the necessary effects and results, that shut against them the avenues of literature, of all intellectual improvement, and then reproached them with want of learning! But a brighter day has dawned. A spirit has come forth from the Giver of all Good Gifts, and a sacred band comprising some of the Wisest, the Noblest, and the most Illustrious of the land, have received it into their Bosom. They have thrown down the wall of separation,—have opened for us, and for all, the portals of light, and invited all to the arena of honorable exertion. *They* have performed their part, it now remains for *you* to perform *yours*.

Need I tell you, that every where our condition has been, and must be ameliorated, in proportion to the general diffusion of knowledge, and to our own susceptibility of its precious effects by the participation of the light that calls them forth.

In this land of knowledge and freedom, you have indeed long enjoyed many blessings, but you have laboured, and still labour under the pressure of many evils; and of these none has been more strongly felt, or more deeply regretted than the want of a place where you might give your children that Superior Education, which the improved state of European Society, and especially of this happy Island, imperiously demands. You wanted only a superior place of education, which might compensate for your famous Universities of old, at Palestine and Mesopotamia: a place whence, without extravagance, you might hope that future *Aben Ezras*, *Maimonideses*, and *Mendelsohns* might proceed, strong and splendid with the science and philosophy of a more enlightened age. The Council of the London University have supplied this want. They have established this Institution for the admission of individuals of all denominations. O! do not, I beseech you, neglect an opportunity which you cannot prize too highly.—And O! let me conjure you, let it no longer be in the power of your Detractors to say that we aid the ignorance of our oppressors, by our own aversion from knowledge; and that we are accomplices in the superstitions which have been the cause and pretext for our persecutions, by fostering superstitions of our own, scarcely less gross, and alas! not always free from the same persecuting character.

And permit me to remind you, that you of all others have the least excuse for rejecting the opportunities now offered you. For it is the peculiar distinguishing character of the Sacred Volume we reverence, that it not only extols knowledge as the noblest ornament of man, but prescribes its attainment as a *duty*. Nay, it not only prescribes the acquisition of knowledge as a duty, but also that of our communicating it to others;—and this not as the *Arcanum* of a guild, not as the *Peculium* of this or

that privileged class—No!—but “Wisdom crieth without, she uttereth her voice in the streets, she crieth in the chief places of concourse, in the openings of the gates; in the *City* she uttereth her words—*saying*: How long, ye simple ones, will ye love simplicity? and scorners delight in scorn, and fools hate knowledge?”* And who is the Author of this address? The wisest, and at the same time the most tolerant of Kings—Solomon King of Israel—whose character is the best confirmation of his words.

Besides the name of Solomon, he bore that of רֵדְיָהּ, the *Friend or beloved of God*. Sacred History represents him to have surpassed the wisdom of Egypt’s sages, as well as that of the wise sons of the East. Surrounding nations (of course idolatrous nations) came to hear his instructive lessons. They were imparted to them freely. No one was asked—What is your creed? It was *he* that raised the glorious structure known by the name of “The Temple of Solomon,” and he thought it was no sin to employ a *Tyrian* Artist to beautify the Holy Building. Neither did he consider it inconsistent with his Religion, to make alliances with the neighbouring nations, and to behave with the greatest courtesy to their Kings. The firmest friendship subsisted between him and the Monarch of the then most commercial nation of the world. A fragment of a letter (preserved in the Hebrew Records) which Hiram King of Tyre sent to Solomon, whilst it shows what princes then thought of their royal functions, shows at the same time how firm that friendship was, בְּאַהֲבַת יְיָ אֶת־עַמּוֹ נָתַן עָלֵיהֶם מֶלֶךְ “Because the Lord loveth his *People* (said Hiram) he has appointed thee King over them.”† Nor was this all. A lucrative commerce was carried on between them. Their subjects ploughed the Ocean together. They

* Prov. i. 20, 22.

† 2 Chron. ii, 10.

jointly, for the first time, circumnavigated Africa, and brought back great treasures into their respective countries. Nor were the sciences neglected. Scripture tells us that Solomon spake of "*trees from the cedar that is in Lebanon, even unto the hyssop that springeth out of the wall: he spake also concerning beasts, and of fowl, and of reptiles, and of fishes.*"* And what else is this but Natural History and Philosophy! In short, the חֶסֶד, the *Friend or Beloved of God*, was the *Friend of the Sciences*, and the *Friend of Man*.

With so enlightening an example before us, how *can* we, how *dare* we look with an evil eye on our fellow-men? How *dare* we neglect the Sciences, or turn our back on Wisdom, when she herself declares,† that unless ye seek her as ye seek for silver, and search for her as ye search for for hidden treasures, ye cannot understand the *fear of the Lord*, nor find the *knowledge of God*. If, then, you prize your Religion—and I know you do—since for what else but your Religion do you suffer Privations, and Exclusions, and the bitter taunts of your Detractors!—if you value the inspired writings of your Divine Legislator, Pious Kings, and Eloquent Prophets—and I know ye do—for even now I behold amongst you many, many, who are as distinguished by general knowledge, as by the particular knowledge of the Holy Law, and its sacred accompaniments—then by these Holy Writings, and by that Religion I conjure you, and solemnly entreat you, not to neglect the golden opportunity which this Institution offers you. Bestow upon your sons those manifold blessings which flow from a Superior Education, and prove that you know how to value the Sympathy with which the Founders of this University have contemplated your privation.

It now only remains for me to return thanks to you all,

* 1 Kings, iv. 32.

† Prov. ii. 4, 5.

Gentlemen, for patient attention:—to my learned and highly gifted Colleagues for the kindness they have shewn me ever since I had the honor of their acquaintance:—and to the Members of the Council for the conferred Dignity. My feeble tongue can add but little to their well-earned fame. Nor are they in need of it. These *walls* will ever bear testimony to their merit. And when the Tree of Knowledge which they have planted shall grow up, and blossom, and bear fruit,—O! then thousands of voices will rise within this Temple of Science, and praise, and bless its Founders, and its Supporters.

THE END.

INTRODUCTORY LECTURE

DELIVERED IN

THE UNIVERSITY OF LONDON,

On SATURDAY, NOVEMBER 15, 1828.

BY

DON ANTONIO ALCALA-GALIANO,

PROFESSOR OF THE SPANISH LANGUAGE AND LITERATURE.

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ADVERTISEMENT.

IN venturing to publish the following Lecture, the Author considers himself bound to offer some apology to the public for an act which, in his own opinion, renders him justly liable to be charged with presumption. The subject is comparatively uninteresting; nor is this original defect redeemed by any abilities displayed in the execution of his task. The applause bestowed upon him in the lecture-room by a partial audience, though highly gratifying to his feelings, ought to be attributed to many causes independent of the real merit of his performance—to sympathy for his circumstances, and a just sense of the difficulties he had to overcome. Yet this over-kind reception has made it imperative upon him to yield to the desire of several of his friends, who wished to examine coolly what they had applauded warmly. That he has complied with their wishes may be thought unwise; but to refuse would have been unkind. Placed in an em-

barrassing dilemma, he has been induced to alter his original purpose of abstaining from publishing this very imperfect work ; and he commits it to the press, not without hopes that the reading public will feel inclined to extend to him part of that indulgence which was shown him by his hearers.

UNIVERSITY OF LONDON,
20th Nov. 1828.

INTRODUCTORY LECTURE.

GENTLEMEN,

WHEN I come forward to address you as Professor of the Spanish language and literature, I am aware of the difficulties of my situation. These are such, that I should sink under them, were I not supported by my knowledge of that liberality which forms a distinguishing feature of the British public; a liberality which I trust pervades my present audience, and which will induce you to bestow upon me that which I stand greatly in need of,—a more than common share of indulgence. The example of my fellow Professors of foreign languages, whose Introductory Lectures have been so kindly, and, as far as I can presume to venture my opinion, so deservedly applauded, is calculated to excite in me both hopes and fears: for if the favourable reception they have met with is highly encouraging, it ought to be considered on the other side that they had a far better title to it than the individual who now appears before you. In them the English hearer had only to overlook some peculiarities of accent, perhaps some inaccuracies of expression more than compensated by beauties of a very superior kind, which, as you have admired, I may be permitted to praise. In me, I am afraid you will find greater deficiencies, and much less to atone for them. What they obtained from the justice of their audience, I must crave from your benignity. A larger demand is now made upon your generosity than any which the preceding audiences have had to answer; yet it is made with confi-

dence, because I am sure that I draw upon funds which can never be exhausted.

As a teacher of the Spanish language, and a lecturer upon Spanish literature, a double task is imposed upon me; and it will be my object in the present Lecture cursorily to examine the character of the former, pointing out at the same time the peculiar advantages of the study of it, and then to give a general idea of the latter.

The Spanish or Castilian language is universally allowed to be unrivalled in majesty and beauty. I might here quote the saying of Charles the Fifth, who is known to have designated it as the most proper to address God Himself; were it not that the evident injustice of his judgment upon other languages, goes far to deprive his testimony of the weight to which it would otherwise be intitled. To the ear of a native, the sounds he is familiarized with from his infancy, and with which all his early habits and associations are connected, must necessarily be peculiarly charming; while whatever is harsh and uncouth in them, will in a great measure escape his notice. Yet those very same circumstances which make him a partial judge, ought to qualify him for an able advocate; and as no one is more deeply concerned in his cause, so no one is abler than he is, to find and point out its favourable points. In the present case, however, his industry and zeal are but little wanted. Common opinion has acknowledged the beauties of the language which is the subject of this Lecture; and a few considerations will, I hope, suffice to show the justice of its decision.

The Spanish language is derived from the Latin, or, I may rather say, is Latin itself corrupted, and, according to common parlance, barbarized by the various nations which have succeeded each other as invaders and temporary masters of the Spanish peninsula. A few learned men, prompted no doubt by a desire of saying something novel, have vainly endeavoured to trace the present Castilian to a Gothic origin; going such lengths as to assert that it is

Gothic Latinized, not Latin Gothicized. Against this theory the whole structure of the language evidently deposes. It is true, that like the rest of the modern languages, Italian not excepted, it has lost the Latin declensions, and admitted articles and prepositions in their stead: but this may and ought to be traced to the laziness of foreigners, who, unwilling to overload their memory with a variety of terminations, rather chose to appeal to the more convenient use of indeclinable particles. Still the Latin origin of the Spanish prepositions is as clearly apparent as that of nouns and verbs. Of *per*, the Spaniards have made *por*; of *cum*, *con*; of *sine*, *sin*; of *in*, *en*; of *super*, *sobre*; while *de* has remained unchanged. The termination of the Spanish substantives and adjectives of the feminine gender in the letter *a* is Latin; that of most of the substantives and adjectives of the masculine gender in the letter *o* is taken from the Latin dative and ablative cases of the second declension. A more complete similarity, amounting on some occasions to identity, will be found in the verbs of both those languages. In the first regular conjugation, the present tense of the verb *amare*, to love—in Spanish *amar*—is *amo*, *amas*, *ama*, *amamos*, *amais*, *aman*; which is exactly Latin if we give to the letter *a* that open sound which it invariably has amongst all the Continental nations. It would be tedious to dwell any longer upon this subject; as the simple sound of spoken Spanish will suffice to convince all who are acquainted with Latin (in the manner in which it is pronounced abroad) of an assertion, the truth of which can hardly be denied. But it will not be useless to observe, that there exist works written by some Spaniards, which are both Latin and Spanish; and some which are Latin, Italian and Spanish; though it must be confessed that their Latin is not of the purest nor the most elegant description.

The original Latin stream in the Spanish language has been considerably swelled by supplies derived from other sources. To a Greek origin a few of them may be traced; and according to learned etymologists, no inconsiderable

number of Hebrew or Phœnician words have been incorporated in the language of a country where the Phœnicians and their descendants, the Carthaginians, are known to have formed numerous and mighty settlements. The contributions from the ancient Iberian languages, from which the present Biscayan or *Vasculence* is undoubtedly derived, are likewise of some importance. The number of Gothic words in the present Spanish language is yet more considerable. The influence of the Arabian upon the Castilian is universally admitted; nay, has been prodigiously overrated. The empire of the Arabs in the South of Spain was no less distinguished by literary splendour than by military prowess. By all the Arabian scholars the page of the Spanish Arabic literature stands confessed to be one of the brightest in the annals of that very remarkable nation. Notwithstanding the difference in manners and religion between those warlike conquerors and the people whom they held under subjection, the amalgamation of the two nations appears to have been more perfect between them and the Southern Spaniards, than in any other country whatever to which the Moslem have carried their arms, or in which they have established themselves. Nor indeed are the traces of their manners even now completely obliterated. He who visits the Eastern and Southern provinces of Spain, will easily recognize, in the features and habits of the peasantry of Valencia, Granada, and Andalusia—especially in those mountainous districts called *Sier-ras*—the aspect, the customs, sometimes the garb, not unfrequently the tones of the inhabitants of Northern Africa. Yet notwithstanding all these circumstances, the number of Arabian words in the Spanish vocabulary is far less considerable than it is generally supposed to be. The tide of conquest which had rolled from south to north soon began to recoil, though not with the same rapidity with which it had advanced. The language of the Gothic Spaniards still continued to be corrupted Latin; and out of it, in process of time, sprung the Spanish Romance, or Castilian

tongue. The poem of *The Cid*, generally allowed to be the oldest composition in modern Spanish now extant, though the date at which it was written cannot be accurately ascertained, belongs to times when the Arabs were yet masters of the best and largest part of the Peninsula; and I do not see in it any considerable proportion of words known to be Arabic, nor of those which generally pass for Arabic idioms. Of the kings of Castile no one had more intercourse with the Arabs than Alphonse the Tenth, surnamed the learned, '*El Sabio*'; and in his astronomical and chemical labours he is known to have availed himself of the skill and knowledge of eminent Arabian professors of those sciences; yet that monarch,—to whom the Spanish language is under more obligation than to any other writer or Mæcenas, who (by admitting that tongue to the dignity of being the interpreter of the acts of government, no less than by his own works, written with extraordinary elegance for those times, and even in a more refined epoch worthy to be called elegant,) may be proclaimed almost the creator of the present Castilian,—does not betray any strong symptoms of Arabicism in his style or in his diction. That code of laws, the "*Partidas*," compiled under his direction, and subjected to his revision, and of which it is pretended that he wrote a part, bears all the marks of the Latin, and but few of the Arabic origin of the language in which it is written. In the course of my lectures upon Spanish literature, this subject will be more fully discussed: let it be sufficient for our present purpose to confute that error very generally spread, which allots to the Arabic a very great share in the composition of the Spanish language. Nor yet let it be believed, because that share is not so considerable as it is generally supposed to be, it is altogether insignificant. Arabic words may be found in the modern Spanish; and though some of them sound harsh, others there are, which, placed by the side of those of Latin derivation, will not be disparaged by a comparison. I do not think that the river which gave its name to the ancient

Bætica sounds more melodious to the ear under its Latin name of *Bætis*, than under its Moorish one of *Guadalquivir*, by which it is now commonly known. Perhaps the word *alarife*, derived from the Arabic tongue, is more melodious than *arquitecto*, taken from the Latin. It ought however to be confessed, that the Arabic words and sounds in general are rather injurious to the musical beauty of the Castilian language.

The contributions from the Italian and French to the Spanish tongue remain to be noticed. The former have been numerous; but in general the great similarity prevailing between those two languages ought to be traced to their common origin, more than to modern importations, though of those importations the Spanish writers of the sixteenth and seventeenth centuries afford pretty frequent instances. The latter have been lately but too considerable; so that the Spanish language of our present times is visibly adulterated by Gallic words, and what is still worse, by Gallic syntax. The theory and the practice of the modern Spaniards in this respect are considerably at variance. While it is universally agreed among them that no such French importations ought to be permitted; nay, while this principle of exclusion is carried so far as to condemn the introduction of words for which no substitute can be found in the Spanish vocabulary, and of novel phrases arising from the state of modern knowledge, and from the influence which new ideas and modes of thought ought to exert over the language,—there is hardly one single Spanish modern work which does not abound with French words and idioms: and the Spaniards, accustomed to derive their information from French sources, vainly try to impart to their writings that pure Spanish colouring peculiar to their old authors, while they constantly urge against each other, and reject with equal indignation, the foul imputation of Gallicism.

After this necessarily rapid examination of the component parts of the language which I profess to teach, as far as regards the sources from which it proceeds, let us pass on to consider it in its present state.

Consisting of a very fair and adequate proportion of consonants and vowels, though the latter may be said to predominate, the Spanish language is uncommonly melodious and high-sounding. An objection has been made against the Italian language, as if it were monotonous from the multiplicity of vowels entering into its composition, and forming the termination of almost all its words,—an objection in my opinion highly unjust, and originating in an imperfect knowledge of the Italian prosody. To such cavil the Spanish is not liable. All its words in the plural number of substantives and adjectives end in the consonant *s*, and in the plural number of verbs in the consonants *s* and *n*. There are also frequent terminations in consonants in the singular number of substantives and adjectives; such as *virtud*, virtue, *color*, colour, *feliz*, happy, *criminal*, criminal. The second persons of verbs in the singular number are likewise terminated in the consonant *s* in all tenses except the past tense of the indicative, and the present or only tense of the imperative mood. All the infinitives of verbs end in the consonant *r*. From the foregoing examples the great similarity, or rather identity, between the Spanish and Latin terminations will clearly appear. Nor is the Spanish deficient in terminations which strongly savour of the Greek; such as *idoneos*, fit, *encantos*, charms, *embelesos*, raptures.

Some Spanish words consist of many syllables, though dissyllables and trisyllables are more frequent in it than polysyllables. Some of the adverbs in *mente* may be formed of a superlative; and this combination produces words very long indeed. Such is the adverb *desatinadisimamente*, which consists of no less than nine syllables.

The accents give likewise great variety and beauty to the Castilian language. In most of the Spanish words the penultima is the accented syllable; but in many, the accent is found upon the last syllable; and dactyls, called *esdrújulos* (the *sdrucchioli* of the Italians), are by no means uncommon. By changing those accents the meaning of words is totally altered. Thus *ce-le-bre*, a Spanish word of three syllables, when pronounced long, *celebré*, means, “I praised or did

praise;" when middling, *celebre*, "that I may, or that he may praise;" and when short, *célebre*, an adjective, "famous or celebrated."

It ought not to be concealed that these beauties of the language which is the subject of this Lecture, are counter-balanced by some disadvantages. The guttural sound of *g* before *e* and *i*, and of *j* and formerly of *x* before all vowels, is very harsh. So is likewise the sound of the double *r*. And that of *c* before *e* and *i*, and of *z* before all vowels,—which is almost that of the English *th* in *thanks*, *theft*, *thick*, &c.,—though not so disagreeable, becomes offensive when recurring, as it sometimes does, too often. Though the Arabs, as we have stated, did not supply a great many words to the Spanish vocabulary, they introduced some of their sounds into the Spanish pronunciation. Such is that strong guttural aspiration which I have mentioned. Nay, in the South of Spain those guttural sounds are so prevalent, that if you were listening to a conversation between some Andalusian peasants, and then to another between Moors of the neighbouring coast of Barbary, placed at some distance, you would think they were talking in the same language; though on coming nearer, you would perceive that the general accent and tone are the only things in which they resemble each other.

To give my audience a just idea of these beauties and faults of my native language, I cannot resist the temptation of presenting some specimens of beautiful Spanish periods. Even those who do not understand their meaning must, I think, be forcibly struck and delighted by their cadences.

In Fr. Luis de Granada, one of our best prose writers of the sixteenth century, we meet with the following period.

*"Blandamente se allanan las grandes ondas del mar en la arena, que con grande ruido suenan y baten en las altas peñas."**

* "Those high billows of the sea, which roar and dash themselves with great noise against the huge rocks, are gently broken upon the sandy shore."

The beauty of the periods of Cervantes is proverbial. The following may be quoted as a specimen.

*“La libertad, Sancho, es uno de los mas preciosos dones que á los hombres dieron los cielos : con ella no pueden igualarse los tesoros que encierra la tierra, ni el mar encubre : por la libertad, así como por la honra, se puede y debe aventurar la vida.”**

In Jovellanos, our best modern prose writer, the following sentence is no less beautiful.

“La gloria misma de las naciones, esa gloria buscada con tan sangriento afán y poseída con tan loco entusiasmo, pasa como la claridad de un relámpago, que en la obscuridad de la noche ilumina por un momento la bóveda del cielo, para restituirla despues al imperio de las tinieblas.”†

If from prose we pass to poetical composition, the beauties of the Spanish tongue will become still more conspicuous. Let us hear, for example, a beautiful stanza from Garcilaso.

“Ves el furor del animoso viento,
Embravecido en la fragosa sierra,
Que los antiguos robles ciento a ciento
- Y los pinos altísimos atierra;
Y de tanto destrozo aun no contento,
Al espantoso mar mueve la guerra?
Pequeña es esta furia comparada
A la de Filis con Alcino airada.”‡

* “Liberty, O Sancho, is the most valuable gift which Heaven ever imparted to mankind: with it, not all the treasures contained in the bowels of the earth, or plunged in the depth of the sea, can be compared: for liberty, as well as for honour, life may, and ought to be risked.”

† “The glory of nations, that very same glory sought for with such bloody-minded earnestness, and possessed with such mad enthusiasm, passes away like the coruscations of lightning, which in the gloom of night illuminate for a moment the vault of heaven, to replace it again under the empire of darkness.”

‡ “Do you see the rage of the fierce wind infuriated amongst the rugged mountains, which fells to the ground by hundreds the ancient oaks and the tallest pines; and, not satisfied with so many ravages, still wages war against the frightful sea? Yet all this fury is trifling, compared with that of Phillis angry with Alcino.”

The verses of Villegas which follow are in a different style, and may boast of equal merit as far as sound is concerned.

“ Dulce vecino de la verde selva,
Huesped eterno del Abril florido,
Vital aliento de la Madre Venus,
Céfiro blando.” *

A stanza of Moratin the father, a poet of the eighteenth century, is likewise strikingly magnificent. It describes the effect of a gust of wind in that huge building the Escorial, and runs thus :

“ Como cuando en la octava maravilla
Del grande Escorial tan celebrado,
Se mueve el coro donde el arte brilla
A impulsos de haracan desenfrenado :
Tiembla el panteon y altísima capilla
Y estupendo cimborio agigantado :
Por los claustros bramando el aire zumba
Y el pórtico magnífico retumba.” †

May I be permitted to conclude by quoting some beautiful lines, written by one of my best friends, which have been very much admired by many of my English private pupils? They are as follow :

“ Encantadas riberas del Betis,
Sacros bosques de adelfas y rosas,
Apacibles colinas y hermosas,
Ha un momento que en vos me encontré ;
Y tranquila ilustrando ese cielo
De zafiro la luna fulgente
Ríelar en la riza corriente,
Resbalando por flores miré.” ‡

* “ Sweet inhabitant of the green forest, eternal companion of flowery April, vital breath of Mother Venus, thou mild Zephyr.”

† “ As when in that eighth wonder of the world, that Escorial so famous, the choir, where the prodigies of art shine, is shaken by the impulse of a violent hurricane: the pantheon, and lofty chapel, and stupendous and gigantic dome tremble, the wind whistles and roars through the cloister, and the magnificent portico repeats the sound.”

‡ “ Enchanted banks of the Bætis, sacred groves of oleander and roses,

Gentlemen, I well know that I owe you an apology for the introduction, and still more for the length, of these quotations. That they are irrelevant I am ready to admit; but I have allowed myself to be carried away by an enthusiastic partiality for my native country, which I am sure you all feel for your own, and will therefore be reluctant to condemn. That enthusiasm, I hope, will not influence me so far as to overrate the importance of the study of the language which it is now my duty to teach.

Upon that importance it would be idle to dwell. You all know that there are few studies which repay so well the labour bestowed upon them, as the learning of modern languages. To the reader it opens a new vista in the country of human intellect; to the traveller it is a source of constant pleasure and comfort. Dreary and unpleasant indeed is the situation of him who visits a foreign country without having become previously acquainted with its language. And this leads me to notice a peculiar advantage at present annexed to the study of the Spanish tongue. In the vast regions of South America, a wide field has been opened to British enterprise. British capital has flowed there in torrents; large establishments have been formed by British individuals; and though the first impulse which directed public attention towards those countries may be said to have subsided, still the permanent interests which have been created there cannot be abandoned, nay, must be cultivated and improved. The demand for Spanish scholars is likely to become in process of time very extensive. Through the whole of that vast continent the Spanish language is spoken; and it is a proud consideration for him who feels deeply and vitally concerned in the glories of that language, that it will be the common tongue of numerous and flourishing nations, who in future times will ennoble it by their thoughts, and adorn it by their writings.

peaceful and beautiful hills,—a moment ago I found myself amongst ye. And I saw the fulgent moon quietly illuminating that sky of sapphire, her light scintillating in the curled wave, and sliding over banks of flowers."

May they never forget, that whatever be the motives of their angry feelings towards their ancient parent country, political feelings have nothing to do with literary pursuits; that the language of Mariana and Cervantes, of Leon and Rioja, the language of the Araucana, the language of their own ancestors, is no less their property than the property of the Old Spaniards; and that instead of adulterating it by spurious words, and vitiating it by improper phrases, they ought to preserve its purity undefiled, and to embellish it with ornaments well adapted to its original character!

Gentlemen, those of my pupils who wish to learn Spanish for practical purposes, will perhaps be glad to know, that in my class for language, I shall confine myself, first, to elementary teaching, and then give an idea of the Spanish idioms, conversation, and letter-writing. But though it will be my object in that class merely to teach for purposes of common use, I shall take care to teach my pupils to pronounce correctly, to write grammatically, and to speak with ease and perspicuity. The method I mean to employ I have explained in my statement to the Council, and it is before the public. It is almost identically that of my colleague, the Italian Professor, in whose observations I am happy to concur. Those who wish for something more, must necessarily attend the lectures upon Spanish Literature, where, I trust, they will find a source of mental gratification.

Upon Spanish literature opinions are very much divided. Some there have been, who have declared it to be unworthy even of a passing notice. No less a man than Montesquieu (though, by the bye, he knew nothing of it) went so far as to say, that the Spaniards had but one good book (meaning *Don Quixote*), and that was a satire upon all their other works. The glaring injustice, nay the utter folly of such a judgment, requires no confutation. Without going such lengths, many critics have pronounced, that Spanish literature is not worth the labour which its study necessarily requires; that it is poor and trivial, deficient in spirit

and vigour, unassisted by science, and unenlightened by philosophy; in short, bearing the stamp of that want of civil and religious freedom which has crushed the native energies of the Spaniards.

A contrary opinion has been entertained by some, more favourable to the productions of the Spanish intellect, though certainly no less miscalculated to give a true idea of the character of Spanish literature. It has been asserted, that in Spanish compositions the Oriental taste is found universally to prevail; that the Spanish writers have followed Arabian models, from which has sprung a wild, romantic, imaginative style of writing, very unlike that of the rest of Europe, and for this very reason, highly interesting. Such is not, however, the exclusive character of the Spanish authors; since, in the most correct of them, too close an imitation of the Latin and Italian classics is a fault with which they may be justly taxed.

Towards the latter end of the eighteenth century, Spanish books were seldom perused by foreigners. Then severe censures were made of them by critics, who had read them but little, and very often not at all. Injudicious apologists took up the defence of the national honour, and their imperfect labours were not very favourable to the cause which they advocated. The answer given by Denina to Monsieur Mason, who, in the article *Espagne* of the *French Encyclopédie*, had ill-treated Spain; the *Saggio Istorico Apologetico*, by Lampillas, an exiled Spanish Jesuit, who wrote his work in Italian against Tiraboschi, Bettinelli, and Napoli Signorelli,—are not calculated to give a correct idea of Spanish literature.

In our days the Spanish authors are more extensively read abroad. In Germany, the Spanish poets are highly praised and admired; and frequently, and as far as I know (for, being unacquainted with the German language I merely speak from hearsay), successfully translated. In France, they are as yet very scantily known. England abounds with good Spanish scholars; and the names of Southey (member of the Royal Spanish Academy, a dis-

tion no less honourable to himself than to the learned body who were liberal enough to confer that title upon a foreigner); of Lord Holland, a name which no Spaniard can pronounce without strong feelings of affection and respect, as that of a zealous and steadfast friend of their country; of Bowring, the elegant translator of several short Spanish poems, and a speaker of that language with remarkable correctness and fluency; of Wiffen, who has given a good version of Garcilaso; besides a few more whom I do not recollect at present, but to whom I should be glad to do justice,—may be quoted with praise, as those of excellent judges of Spanish literature. And this, Gentlemen, cannot but inspire me with a sort of awful feeling, upon considering how bold is the task which I have undertaken, in appearing before a public where I am sure to find so many intelligent judges, who may pass their sentence upon my labours,—a sentence which their benignity alone can render favourable.

Those of my present audience who have read the rough outline of my labours which has been laid before the public, are aware that I intend to examine the literature of Spain through the different epochs in which I have divided it, in historical succession. A plan similar to that followed by my colleague the Professor of Italian, might perhaps be found more advantageous; but I confess that I do not think our literature rich enough to admit of the classification which he has adopted. I have therefore preferred to consider it in its birth, rise, decline, depression, and restoration, giving thereby the advantages of unity to my course of lectures.

I begin with the poem of *The Cid*, the first monument of our poetry and language. I wish it had fallen to my lot, or, I should rather say, I wish I was competent to treat of previous times,—I mean to say, of the literature of *Spain*, instead of the literature of the present Spanish language. The literary glory of my country under the Romans and the Arabs was great indeed. In the former epoch, that

province of the Roman Empire, which, according to Gibbon, "*in the person of Trajan produced an Emperor whom the Scipios would not have disowned for their countryman,*" and which produced likewise, in Hadrian and Theodosius, two more princes whose names rank very high in the list of the Emperors of Rome,—gave birth to a series of writers who fill with honour the secondary places of Latin literature; beginning with C. Julius Hyginus, the first of the Spanish writers mentioned by Nicolas Antonio; and including the names of Columella, Silius Italicus, the Senecas, Lucan, Martial, and Quintilian. Arabic literature is well known to have flourished in Spain. And I have seen with proud satisfaction, that my colleague, the Professor of Hebrew, mentions the Spanish Hebraic writers as forming of themselves a division in the map of Hebrew literature. But this is a digression, though, I hope, one which will be pardoned; and if, as a patriot, I may be permitted to cast a rapid glance, and call your attention to those bright geniuses, the pride of the country where I was born, I must, as a Professor of the Spanish language, leave to my colleagues, happily far abler than myself to do justice to such a subject, the task of explaining the beauties and discussing the merits of authors, who, though Spaniards by birth, neither belong to the modern history of Spain, nor have they written in her present language.

With the poem of *The Cid*, therefore, must I begin; and I confess that I do not find in it much to praise, though I know that there are many good judges who hold a contrary opinion. In its earliest period, the Spanish literature, and particularly the Spanish poetry, cannot boast of great novelty or sublimity. It is the opinion of the Rev. Blanco White, a very good judge in literary matters, though often very hostile to his own country, that the Spanish authors who flourished before the sixteenth century are generally judicious and timid; not, as some have thought, bold and romantic. In that opinion I fully agree. The Code of the "*Partidas*" is indeed beautifully written; and in the book

of Conde Lucanor there are very fine and witty things. As a satirical writer, the Arcipreste de Hita has many a lucky hit. The Letters of Fernan Gomez de Cibdad Real are highly amusing, lively, and clever; and, as a model of epistolary writing, may challenge competition with any other collection of letters whatever. The lines of Jorge Manrique upon the death of his father, are uncommonly beautiful: yet theirs is a sober and majestic, not a wild beauty. The greatest poetical work of those ages, *El Laberinto* of Juan de Mena, is likewise liable to the objection of tameness; and though not deficient in merit, is inferior to the verses which have just been quoted, if there can be a comparison between a long poem, and a short, though elegant, composition. One of our best living poets, Quintana, has compared many of our ancient poems to that old panoply preserved in armouries, which, however it may be admired by the lover of antiquities, is totally unfit for the uses of modern warfare. This judgment, though severe, is in many respects just. The ballads (or romances) of that epoch may claim an exception, but that exception must be qualified. The merit of simplicity and occasional energy and pathos they certainly possess; but, in my opinion, our best ballads are to be sought for amongst those written in a more recent era.

At the beginning of the sixteenth century the literature of Spain assumed a totally different character. The revival of classical studies, the frequent intercourse with Italy, and the new impulse which the human intellect then received, were productive of the most beneficial consequences. The school of writing, to which the Spanish authors of those times may be said to belong, is that which in our days has received the appellation of Classical amongst the continental nations. Nor could it be otherwise. The great men of those times were deeply skilled in classical lore. The undertaking of the *Biblia Polyglotta* shews how far the study of the ancient languages had spread in the Spanish peninsula. Arias Montano, Simon Abril, Antonio de Nebrija,

Luis Vives, Francisco Sanchez de Brozas, and many more, were eminent in those studies. Our historians Mendoza and Mariana are decided imitators of Sallust, Livy, and Tacitus. Granada is quite Ciceronian in his periods. Garcilaso, Herrera, Leon, the two brothers Argensola, teem with imitations of the poets of antiquity. It will be my task to do justice to the beauties of the works of those writers, and to point out their faults: one of the latter I ought to notice here; namely, an occasional want of boldness and originality of thought; a censure, however, which ought not to extend to all of them, nor to embrace all cases. It is easy to trace the cause which produced so extraordinary an effect upon minds endowed with great energy.

The kings of Spain at that time aimed at preserving unity of faith, and, as far as possible, uniformity of thought, in their dominions, and chiefly in that kingdom which was the seat of their power, and in its importance and their estimation the principal part of their empire. To attain such an end the Inquisition was established; but the spirit which gave birth to that tribunal made itself felt even in those things to which its interference did not extend. To serve God and the king were the objects which the Old Spaniards kept constantly in view; and to attain them, they knew but of one way, the least deviation from which was sure to lead them to their ruin, not only in the next, but in this world. It is not my present business either to extol or to censure such a state of things; but its influence upon literature, as coming within my province, deserves and ought to be noticed. From it, the great power and influence of the Spanish clergy had their origin, and the studies of the Spaniards were directed to those paths which exclusively led to honour and preferment. Theology, but not free discussion, became the principal of those studies. Scholastic philosophy was also cultivated as an auxiliary to theology: polite literature was merely tolerated, not protected; and though protection is very inferior to freedom in its effects upon literature, yet it is better than neglect

without freedom. The natural sciences were but little attended to. The effects of all this might be anticipated. Great sameness prevailed throughout the works of the Spaniards. In those things in which they could, they undoubtedly did excel; but those things were very few indeed. There are great beauties of style in their historians; great erudition in some of their political writers; much pathos, and a flowing diction in their ascetics; great melody and occasional sublimity in their poets, chiefly in those devout effusions where their genius, fettered everywhere else, could pour itself unrestrained, and in the expression of love, which with them became a sort of devotional feeling: but neither could their historians aim at a comprehensive and philosophical view of their respective subjects; nor their political writers enter into those leading principles which are the ground-works of political science (still less into an application of them to passing events); nor the ascetics deviate into original and spirited disquisitions upon the main principles of morality and religion; nor the poets venture upon bolder themes than (as is observed by Quintana) vague moralities and love-songs mixed with pastoral allegories. A few instances may be quoted in which the Spaniards of that age partially broke through those trammels; but the general character of the Spanish literature of the sixteenth century will be allowed by impartial judges to be such as I have described.

The imitations of the Classics and of the Italians came at last to an end; and the Spanish writers became more original, though less pure in their taste. Precluded from imparting the vigour of philosophical inquiry, or the energy arising from political contention, to their works, they often lost themselves in puerile refinement, and mistook bombast for elevation; but at the same time trusting more in their natural powers, they were more national, natural, and original in their style of composition. Towards the latter part of the sixteenth century and the beginning of the seventeenth, they trod upon new paths, and often met with suc-

cess, but at other times with deserved failure. Then were written most of the pastoral novels, in which a few scattered beauties can hardly compensate for the want of plan, of true and forcible delineation of character, and of natural pathos in painting the workings of passion. The satirical novels, the first of which, *Guzman de Alfarache*, had been written some time before, are in my opinion far superior to the pastoral. Then Cervantes wrote *Don Quixote*, a work which it would be idle to praise here, since its claims to universal admiration are generally admitted. Then Lope de Vega gave a new tone to the Spanish drama. Then, in fine, were composed most of those delightful Moorish and pastoral ballads, which added to the simplicity of previous compositions in this line, many other valuable qualities; and which, even when partly defiled by *concetti*, made ample amends for this fault, by the melody of their versification and the readiness of their wit. In mentioning the works of Cervantes, our Plays, and our Ballads, I have touched upon the three branches of Spanish literature which are best known and most admired by foreigners. Upon their merits I shall dwell at length in my lectures; but the tribute of applause to which the authors of these productions are indebted will not make me forget the less admitted claims to approbation of their less known fellow-countrymen.

It is at this time that traces of Oriental taste may be discovered in the compositions of the Spanish poets. That it arose from their being conversant with the Arabic authors, is extremely doubtful. By the mass of the Spanish people the Arabs were then hated as infidels, if not despised as barbarians. The treasures of Arabic literature contained within the walls of the Escorial were not fully brought to light till the publication of Cassiri's *Bibliotheca*, edited in the eighteenth century: but the manners of the people in the South of Spain were Arab-like. A taste for hyperbole and metaphor prevailed amongst them, partly owing to their ancient connection with the Orientals, partly to the influence of a congenial climate and habits of life: and poets in departing from the Italo-classic school, imparted

to their style of composition the tone, I may say the flavour, of their present social existence. The siege of Granada was to the Spaniards what the siege of Troy was to the Greeks. Moorish names became therefore poetical; and in a country where at that time retirement was thought an indispensable virtue of the fair, the lover sung his love-tale to his mistress under the allegory of a Moorish gallant courting a Moorish damsel: thus poetry assumed the Arabian dress. From poetry, prose caught the infection, and became animated with superior spirit, but was frequently inflated and conceited.

It cannot be denied that the Spanish writings of the seventeenth century are liable to great objections. Still even in that era there flourished men of great eminence, whose works are now-a-days read with pleasure. The name of Quevedo, one of the first authors of his time, is very well known. Saavedra is undoubtedly affected, but highly elegant. Moncada is one of the most elegant,—Melo the best, of the Spanish historians. The dramatists of that age are no less remarkable for their excellence than for their numbers. At the head of these is Calderon, whom the critics of a very enlightened nation have made an object of unbounded admiration and applause, in which sentiments I am ready to concur; though perhaps I shall not go such lengths as they do in their approbation of that author, nor bestow it upon those passages where they think it is most deserved. Many were the dramatic writers, contemporaries of Calderon; and by some of them he was equalled in many respects. To mention the names of them all would be useless here; but in my lectures I shall examine their respective merits, and will not conceal their faults. It has been affirmed by Andres, who, though a Spaniard, wrote in Italian, and shows no partiality to his own country, that the productions of the Spanish dramatists very much exceed in number those of any other country whatever. All those plays, of course, I have not read, any more than many have who quote them. In this, as well as in other points, I do not consider myself as acting the part

of a bibliographer, and shall therefore briefly dismiss those authors whom I do not consider worthy of particular notice, and confine myself to canvassing the merits of those who have left the stamp of their genius, and ought therefore to be looked upon as having had an influence, upon Spanish literature. Yet this part of my task will be extensive, and, I flatter myself, not unproductive of pleasure to those who will honour my course with their attendance.

I have to treat next of a dreary epoch in the history of Spanish literature. In it, however, flourished Solis, who may be called the last of the ancient Spanish writers. He has left two very good Plays, and a History of the Conquest of Mexico,—a work well known, and severely stigmatized by Robertson as a production of human genius, the fame of which is much above its real worth—an unjust sentence, which has been retorted upon Robertson's historical compositions by Mr. Southey, perhaps with equal injustice. It is a work abounding with great faults, compensated by no less great beauties; and no person thoroughly acquainted with the Castilian language can read it without inexpressible delight, admiring even where he condemns. After the death of this affected but eloquent writer, Spain was plunged in absolute mental darkness. The age of barbarism which I am mentioning is a singular phænomenon in the history of the human mind. Without a revolution, without an irruption of foreign enemies, solely in consequence of internal causes, all traces of good taste, nay, even of common sense, were completely obliterated amongst the Spaniards. The prostration of the state as a political power, alike a consequence of those internal causes, was coëval with the prostration of the Spanish intellect. The war, commonly called *of the Succession*, took place at that time, and its effects were such as might have been anticipated. But the elevation of a Bourbon to the throne of Spain was attended by some beneficial results. The form of government was somewhat altered from one to another sort of absolute monarchy. The Inquisition remained untouched; but it was

rendered more subservient to the Crown, and milder in its operation. Literature was protected according to the French fashion of those times. Two royal Academies were created, one of Language, another of History. A new set of writers arose,—no longer the writers of Old Spain, but French in their doctrines and in their dialect. Luzan wrote his work upon Poetics, in which he often copied that French author, now forgotten even in France, Le Bossu. A writer of a different cast, Feijoo, a Benedictine monk, arose to wage war against the prejudices which prevailed in the natural sciences, and against the extravagancies of popular superstition. Though totally devoid of genius, and hardly more than a translator of French works into not very pure Spanish, he possessed two qualities no less rare and estimable than genius itself; namely, common sense, and moral courage. He knew what was good, and did not shrink from declaring his real sentiments. His works were very useful indeed. I need not say that he had to fight many a battle against enemies whose rancour was in proportion to the badness of the cause they advocated. He was supported by the Government in a manner truly characteristic of the state of Spain in those times. A declaration was issued by the king, stating that since His Majesty had been pleased to bestow his approbation upon the writings of Father Feijoo, it was highly improper that anybody should venture to censure them.

The protection afforded to literature was productive of some good effects, though necessarily limited in their operation. The new writers of the French school were tame, spiritless, and stiff; but with all their faults no comparison could exist between them and their barbarous predecessors. A better school was created in the bosom of the Universities. Though the studies in those establishments were far from good, there the youth met, and the good effects of association were soon felt. What was learned in the lecture-room was discarded in the closet; new books were procured, and new lights broke in upon the students. The effects

of this were visible in the Spanish writers of the latter end of the eighteenth century. Then flourished Jovellanos, the steady patriot, the enlightened and firm magistrate, the elegant and melodious, no less than philosophical writer, in whose works the beauties of style, and the more desirable qualities of sound principles in morals, in legislation, in literature, in the fine arts, and even in political œconomy, as far as this science went in his time,—are happily combined, and shine with equal splendour.

I shall treat with more delight of this period of Spanish literature, because it is comparatively little known, and because it seemed to be the harbinger, the Aurora of better times. It was a bright dawn; but, alas! the day which followed was clouded and stormy, and ended in gloom and confusion. Spain was doomed to pass through two successive revolutions, upon which it would not be proper that I should speak in this place. Most of her literary men turned their attention to politics, and were all, or nearly all, wrecked upon that rock. The effects were fatal to the mental cultivation of that country. In the field of Spanish literature many stately trees have been felled to the ground, many young opening flowers have been nipped in their buds. Some still remain:—let us hope that they may quietly yield their fruits, and be surrounded with an extensive, luxuriant, and sound vegetation.

Do not think, Gentlemen, that I decline the task of expressing my opinion upon my contemporaries. That it is invidious, I confess; yet without it my labour would be incomplete. I pledge myself to perform it honestly and fearlessly, according to my best judgment, dealing impartial justice to friends and foes; and when erring, erring from the purest motives—yielding perhaps sometimes to literary, never to political prejudices. To act otherwise would be a signal proof of disrespect to that public by whom I must be heard and judged, to the Council who have called me to this Chair, to what I owe to the dignity of my own character. I wish that the least deviation in this particular should be se-

verely visited upon me; for I should deserve to be overwhelmed by your indignation, were I to sink the character of a Professor of literature into that of a disappointed political partisan.

The very imperfect sketch of the literary history of Spain, which I have just submitted to my audience, is at the same time an outline of the plan of my lectures. In them I shall follow the same order, and examine more at length the particular character of each of those literary epochs. Then will follow an analysis of the authors who flourished in them, and gave to them a peculiar tone. My students will be required at the end of the examination of each of those epochs, to give some extracts of what they have heard from me. I shall insist upon being favoured with their own critical observations upon the subjects which have been treated of; and their objections, when they shall have any to offer, will be earnestly solicited and amicably discussed. It may possibly, nay, it will probably happen, that on some occasions the judgment of the teacher should yield to that of his pupil; yet this, far from being humiliating to my vanity, will rather inspire me with a just pride, by showing that I have attained the great aim of my ambition, namely, the improvement of my students.

Gentlemen, I need not say that I rely upon my pupils for the success of my labours. Without industry on their part, my zeal would be vain;—aided by this, even my slender abilities may be made subservient to their advantage.

The usefulness of the studies which I am intrusted to direct, remains to be noticed. That they belong to that class generally called ornamental, I must admit. But it is unnecessary to say here, that the pursuits of a liberal mind, the elegancies of life, are mainly important to the happiness of social existence. Against Spanish literature an objection may be urged, namely, that being unconnected with philosophy, it adds but little to the stock of useful knowledge. True it is, that those Spaniards who are generally allowed to be high-souled and noble-minded, whose na-

tural capabilities stand confessed by all who have visited their beautiful country,—equal to their minds in fertility and grandeur, but like them, suffering from want of cultivation, have not rendered themselves conspicuous in the scientific world, nor made many important contributions to the highest and most useful departments of political, moral, and natural philosophy. That their intellects are equal to those pursuits, it is easy to prove; and England, so justly proud of her pre-eminence in nautical science, will acknowledge that the name of Mendoza, a Spaniard, stands foremost upon the list of the authors by whose writings that science is taught to the English sailor. Spain was the first country that could boast of a regular and scientific, correct and complete, set of maritime charts of her coasts and harbours. But it is the misfortune of that country, that the scientific men whom she has produced, are not known abroad, and but little known amongst their own countrymen; because the want of a reading public has deterred them from writing, and, when they have written, has deprived their labours of the interest to which they are intitled. Thus the country which has added the whole continent and islands of America to the known world, and thereby so mainly contributed to the advancement of science in general, is accused of having done nothing for the interests of civilization.

Do not think, Gentlemen, that, misled by a natural partiality, I am attempting to prove that Spain ought to be considered as upon a level with Italy in point of scientific knowledge. No; dear as my country is to me, truth is still dearer. In speaking upon Spanish literature, I have alluded to some causes which had an influence upon its past and present state. Upon science, that influence was much greater. What could men do for scientific knowledge, who lived in a country where the political institutions were almost exclusively calculated to impede and retard its progress?

But is it to be supposed, that because there are but few

works of general utility written in the Spanish language, the study of the good Spanish historians, of the good Spanish novelists, and of the good Spanish poets, ought to be neglected? Works upon science are as those trees which, transplanted from their native soil, still flourish and yield their fruits; but the productions of imagination, which owe part of their merit to the beauties of their style, are like those tender fruits which lose their beauty and flavour as soon as they are removed from that ground where only they can grow and ripen. To England alone belongs the glory of having produced Bacon and Newton; but the treasures contained in their works are equally shared by all nations. Shakspeare and Milton, however, can be only understood thoroughly when read in the language which they have adorned. Spanish works upon science can as well be perused in translations as in the originals themselves: but who can understand *Don Quixote*, unless he is conversant with the language in which it is written?

There is yet a higher consideration, by which the study of Spanish, or let me say of foreign literature in general, is recommended. This my colleagues, the Professors of foreign languages, have touched upon; but even their eloquence has left me something to say upon so rich a subject. By means of that study, not only are prejudices dispelled, but strong affections are created. Nations not only cease to hate, but begin to esteem and love each other. Thereby commerce, the greatest blessing of social man, is promoted; and war, his bitterest enemy, is in equal proportion discouraged. The present times afford more than one instance to prove that this is no visionary thought. The exchange of literary productions is becoming no less free and brisk than the barter of manufactured goods. The literary fame, any more than the political happiness of a state, is no longer considered to be detrimental to its neighbours. The British Channel is not regarded merely as a ditch to protect this land from foreign hostility, but as a safe and convenient road to import and export. The ap-

plause with which the genius of Shakspeare and the abilities of the English actors are greeted in Paris, finds a responsive echo in the theatres of London, where the great masters of the French drama, and the eminent professors of the French stage, are no less enthusiastically applauded. At the same time an individual who, as was done a few years ago by one of the greatest men England has ever produced, would venture to designate France as the natural enemy of England, would be no less blamed for his uncharitableness, than ridiculed for his absurdity. Cosmopolitism can no longer be censured as pretending to supersede our natural, domestic, and patriotic affections by a vague love for the generality of the human kind, since it has been found that the private and the general interests are almost always the same; and that charity, without ceasing to be an exalted virtue, is, in most cases, but another name for worldly wisdom. Thus literature acts upon politics and morals, and is in its turn reacted upon by them. I cannot but think that the Council of this University acted under this impression when they thought of including the languages and literature of foreign nations in the instruction afforded within these walls. In doing so, they only conformed themselves to the spirit of the times. This novelty was highly befitting an institution differing from all of its kind, as much as the epoch in which it has been founded differs from preceding epochs. The *spirit of the age* is a term which has been ridiculed by many shallow critics, who affect to deny its existence, and yet by several symptoms show that their incredulity is but idle vapouring; "for they believe, who fear." That spirit, Gentlemen, that "*airy nothing*," has been embodied in the present Institution, and has found here a "*local habitation and a name*." Do not think that I am making a panegyric on the body to which I have the honour to belong: I am merely dissecting and analysing its nature and its ends, as far as is conducive to elucidate the point of view under which I consi-

der, and wish that you would consider, the feeble part which I have to sustain in its general labours. I repeat, that this establishment is a remarkable creation of this country and of the present age; and that in no country but this, where practical freedom is so extensively enjoyed, and in no age but the present, when knowledge is so widely diffused, could it have been called into existence. It has been founded by private individuals of different ranks, pursuits, avocations, and modes of thinking, bound together by no other tie than their zeal to promote liberal education. It depends upon no patronage either of a government or of a party, but upon the candour and good sense of the people at large. It must therefore stand or fall by its own merits, and can ask for no other favours than to be allowed fair play. Though it is intended to form scientific and professional men no less than elegant scholars, it bears the modest garb and business-like aspect of a joint-stock company. It is no monopoly, for it has already found a rival, actuated, it is hoped, by a spirit of noble emulation, with which it must contend for the palm of triumph in fair and honourable competition. Its doors are open to men of all creeds, of all ranks, of all parties. It rests its claim to the title which it has assumed, not upon the multitude of buildings of which it consists, but upon the universality of instruction which it affords. And though last, not least, to make its basis broader and more comprehensive than those of all the hitherto existing establishments of the same class, and to render itself worthy of an age distinguished by the friendly feeling and free intercourse subsisting between the various nations of the civilized world,—it has admitted within its precincts foreign Professors of all those nations, to teach their different languages, and canvass the merits of the respective productions of their eminent authors; contributing thereby to the encouragement of those social sympathies and extensive charities which bid fair to dry up many of the sources of the calamities of

nations, and to realize to a great extent that high boast of literature until now but partially true, namely, that it softens the manners of mankind, and leaves no room for ferocity—

“*Emollit mores, nec sinit esse ferus.*”

Gentlemen, I may be taxed with too much enthusiasm : these considerations, I am afraid, will be found too lofty ; yet I should be sorry to dismiss them, since by so doing, my pupils and myself would be sure to lose part of the benefits to be derived from the instruction which it is my duty to impart. The higher we think of the pursuits in which we are engaged, the fitter we become to follow them with alacrity and ultimate success. Under the impression of such considerations, my labours assume more importance in my own eyes, and I am brought nearer to the level of the duties of my situation. I consider that while I am teaching the Spanish language and lecturing upon Spanish literature, I am not merely indulging in elegant trifles, but performing a task which, as a part of a great system, tends toward that great end of utility, the object to which all human labours should be directed. I consider that I am serving the best interests of mankind in general, and more especially those of my native country, which I do and ever shall hold dear, but which perhaps I am doomed to see no more. I consider, finally, that I am rendering myself useful, and, as far as I can, paying the large debt which I owe to this land of hospitality, where I have found a second country, and attained the enviable distinction of appearing before you in my present character, and of having my humble name connected with that of the University of London.

THE END.

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INTRODUCTORY LECTURE.

GENTLEMEN,

IN presenting myself before you for the purpose of delivering a course of Lectures upon the science of Botany in this University, I naturally labour under much anxiety; not only as to the success that may attend my efforts at explaining the principles of the science I am called upon to profess, but also as to the opinion that may be entertained of the view I take of its real end and object, and of the mode in which it should be taught. In literature, in physics, in medical science, and even in the sister branch of Natural History,—zoology, the principles upon which those subjects are to be taught are well understood and recognized; and their utility, as sciences or branches of learning, does not require to be insisted on. But in Botany the fundamental principles are still unsettled; the world is much divided about them, and the purpose of the science, except as an accomplishment, is far from being generally understood. I must therefore, on all these accounts, most particularly crave your indulgent and patient attention; an indulgence and patience which it is the more necessary for me to solicit upon this occasion, when I look around me and consider who some of those are that I address, and how slender my pretensions are to instruct them.

I need not explain to you that, by most modern philosophers, all matter is divided into that which has *vitality*, and that which is *destitute of vitality*; the former being called ORGANIC, and the latter INORGANIC. Of these two

classes, the former may be said to be merely the latter in a state of life.

ORGANIC bodies are themselves divided into two kingdoms, the *Animal* and the *Vegetable*; the former is popularly distinguished from the latter by the power of voluntary motion from place to place,—a power, of which vegetables, which are fixed to the soil, are destitute. It is scarcely worth while to enter at this time upon a discussion of the strict value of this character, or to show by what nice gradations these and all other distinctions insensibly melt into each other, as the confines of either kingdom are approached. When you shall have made yourselves acquainted with all the principal forms under which Nature presents herself, and shall have studied the various links by which one kind of matter is connected with another, you will probably arrive at the conclusion, that there is no such thing as a definition in Natural History; and hence you may come to doubt: so insensible, and at the same time so complete, will you find the gradations between *men* and *trees*, between yourselves and those gigantic creations, of which the timbers of this building may be called the bones,—hence I say you may come to doubt whether any one can truly define the boundaries within which the two kingdoms, that these bodies represent, are mutually confined. But with this question we have at present no concern. The ordinary character of locomotion existing in animals, and not existing in plants, is sufficient as a common mark of distinction, without embarrassing the definition with exceptions. The science that treats of the animal kingdom is called ZOOLOGY; that which applies to the vegetable kingdom is called BOTANY.

The objects of Botany, as I understand it, are twofold.

Firstly, to determine the structure, both external and internal, of vegetable bodies, and the laws under which they live, and grow, and propagate. And

Secondly, to acquire the power of distinguishing with precision one kind of plant from another.

This is, in a very few words, Botany properly so called, and is the science, which it is my duty to teach, as distinguished from *Materia Medica*, to which belongs all that relates to the application of vegetable substances to the purposes of medicine.

At what period of the world Botany first began to be studied as a science, has not been satisfactorily ascertained. By some it has been referred to the highest ages of antiquity: we are assured that Moses and Solomon and other Jewish writers, especially the last, were Botanists, and that traces of much knowledge of the science are to be found throughout the Scriptures; Hesiod and Homer are also enlisted in the band of ancient Botanists. But I confess it seems to me difficult to assign the science any such antiquity. That in the most remote ages man had his herbs and his roots; that he was acquainted with the properties of one plant and the uses of another; that he gave them names; and that poets derived many of the beauties of their language from them,—was natural enough; indeed it could not have been otherwise: but this had nothing to do with Botany. The first dawn of that science must have broken from out of the deep investigations of the nature of matter and mind by the philosophers of Greece. How much they knew we have no accurate means of judging; but that they knew a great deal of vegetable physiology is obvious, from their famous paradox, that plants are only inverted animals; a sentiment which, however strangely it may sound, could only have arisen from an extensive knowledge of the vital phænomena of plants. Nor could the doctrine of Aristotle, that all organic matter exhibits a series of successive degrees of development, have possibly been conceived or promulgated, unless the philosophers of his day had possessed a practical acquaintance with vegetation infinitely beyond that of the ages that succeeded.

Happy had it been for them if, instead of retrograding in the path of science, or rather stepping out of it altogether, they had only pursued the course commenced by

Theophrastus 350 years before Christ. By that naturalist the beginning was made of applying particular terms to particular modifications of structure: he first named the petiole, which he called *μίσχος*; he distinguished nut-bearing trees, which he called *ὄσπρια*, from those of which the fruit is capsular or *ἐλλοβοσπέρματα*. He demonstrated the absence of all philosophical distinction between trees, shrubs, and herbs; a distinction upon which his successors were fond of insisting. He speaks clearly of the parenchyma and woody fibre of wood, the former of which he calls the flesh; and he described accurately the difference between Palm wood and that of trees with concentric layers*; so that in point of fact, the discovery of the difference between Dicotyledonous and Monocotyledonous wood was made by Theophrastus above 2000 years ago, although it was never applied to the purposes of systematic division till about thirty years since. Subsequently to this period Botanists almost disappeared for a long season. Those who have been dignified by historians with that title were either, like Dioscorides, mere *herb-gatherers*, persons whose writings consist of catalogues of names, with imaginary virtues attached to them, or *compilers*, who, like Pliny, knew little themselves, and misunderstood those they copied; or finally *poets*, who, like Virgil, drew much of the beauty of their language from the charms of Nature. This cessation of all philosophical inquiry into the nature of vegetation endured above 1700 years, during the whole of which time scarcely a single addition was made to the stock of knowledge left behind him by Theophrastus. In the room of information books were filled with errors, superstitions, and absurdities, which almost exceed belief. It is not worth while to advert to

* "Ἐχει δὲ τὴν μήτραν, τὰ μὲν μεγάλην καὶ φανερὰν, ὡς Πείρος, Δρυς, καὶ τὰ ἄλλα τὰ προσηρμένα· τὰ δὲ ἀφανιστέρων, οἷον, Ἑλαία, Πύξος· οὐ γὰρ ἴσθιν ἀφορισμένην εὖ τω λαβεῖν· ἀλλὰ καὶ φασὶν τινες οὐ κατὰ τὸ μέσον, ἀλλὰ κατὰ τὸ πᾶν ἔχειν, ὥστε μὴ εἶναι τόπον ὀρισμένον· διὸ καὶ εἶναι οὐδ' αὖν δόξειεν ὅπως ἔχουσιν ἐπὶ καὶ τοῦ Φοίνικος οὐδεμίαν φαίνεται διαφορὰ κατ' οὐδέν. Theophr. Hist. 1. 8.

them particularly in this place, especially as they relate to the history of medicine rather than of Botany; one instance at least may suffice. A certain Nicholas Myrepsicus, one of the last of the Greek physicians, who flourished in the thirteenth century, in compiling from an Arabian writer, mistook the word Dar-sini, which signifies the cinnamon, for ἀρσένιον, the mineral called arsenic; and in consequence of this blunder, which there was for a long time no one to detect, one of the most useful of all aromatics was held for years to be a dangerous poison.

But with the revival of letters a new direction was given to researches in Natural History. Men ceased to content themselves with blindly copying the writers of antiquity, and set themselves in earnest to examine the objects of Nature that surrounded them. The woods, the plains, the rivers, the ocean, the valleys, and the mountains, were investigated with an ardour that soon made amends for ancient indifference. The first consequence of this was a discovery of the utter worthlessness of the greater part of those writers to whom the world had so long been bound in servile obedience. The spirit of inquiry once excited, men speedily learned to estimate rightly the greater value of facts than of assertions; one discovery produced another, and in a few years a new foundation was laid of that imperfect but beautiful science which constitutes modern Botany. In the early part of the sixteenth century, John Manardi, a native of Ferrara, described the real nature of the anther. He was followed by a long train of writers of various merit, who at first indeed applied themselves exclusively to the collection of new species, but subsequently to an examination of the physiological characters of plants, and to the laws applied by Nature to the government of the vegetable kingdom. Materials soon began to accumulate; and the confusion that had once been caused by ignorance, threatened again to overwhelm the science in consequence of the rapid addition of new matter, which there was no means of keeping in order. Hence *Systematists*

sprung up; a race of inquirers to whose labours the present advanced state of Botany is no doubt mainly to be ascribed. That the efforts of the earliest of these writers should have proved unsuccessful, will excite no surprise; with little knowledge of vegetable physiology or anatomy, and with scarcely any notion of the laws of affinity and metamorphosis, they could not be expected to succeed. We should rather wonder at what they did, than at what they omitted to do. Many of them had great merit, especially *Joseph Pitton de Tournefort*, a Professor of Botany at Paris, who flourished in the end of the seventeenth century, and upon whose system the modern arrangement, according to natural orders, is undoubtedly founded. This, however, and all others, was for a time eclipsed by another, better adapted to the circumstances of the times, and emanating from a writer who, having the courage and talent to carry reformation into every branch of Natural History, imparted a lustre to his peculiar system of classification, which is only now, after the lapse of a century, beginning to grow dim.

Charles Linné, or Linnæus as he is usually called, was a person exactly adapted to the state of science of the time in which he lived. The various departments of natural history had not at that time any thing like their present extensive range, and were without difficulty to be investigated by a single naturalist. They were all equally in need of revision and improvement; they all wanted a settled code of laws to reconcile the fluctuating and jarring opinions which at that time prevailed, and above all things, the nomenclature of Natural History required to be reduced to one uniform standard. For this Linnæus was peculiarly well adapted. Nature had gifted him with a logical accuracy of reasoning, and a neatness and perspicuity of expression, which carried with them a charm that the world was not slow to appreciate; and these produced the stronger impression, because naturalists had previously been but little accustomed to them. The opinions of Linnæus were re-

ceived as if oracular, and their faults were lost in the blaze of light which they cast upon the whole of the organic world.

Most of his labours in other branches of Natural History are now obsolete ; but his botanical system being still in use among us, requires that something should be said upon it. Availing himself of the curious discovery that there exist in plants parts analogous to the sexual organs of animals ; a question, indeed, of which he has also the merit of having finally demonstrated the truth ; and finding that they were very constant in different species, he conceived the idea of employing certain characters derived from those organs as the distinctions of classes and orders. With much skill he reduced all the plants described by his predecessors under these classes, and thus established a system of Botany which was at one time universally adopted, and which, although now superseded by more perfect modes of arrangement, is still fondly clung to by many, to whom, from an acquaintance with it during all their life, it has become endeared. The merit of the Linnæan system was its simplicity ; the characters on which the arrangement was made to depend were obvious and easily perceived ; and in the early part of Linnæus's career, the masses of plants grouped under his classes and orders were not inconveniently extensive.

But it was perceived by those who took an enlarged view of the ends of Botany, that however useful this system might have been at the time of its original contrivance, yet that it was by no means such as a more advanced state of science would demand, and that it failed altogether in doing more than collecting, in groups, plants agreeing in one or two unimportant peculiarities, but differing in every other respect. It was found, too, that characters derived from the number of the sexual organs alone, were less certain than was in the beginning believed, that exceptions were extremely numerous, and that cases of doubtful structure were by no means uncommon. And, finally, it was discovered that the principles of Linnæan classification pro-

duced the mischief of rendering Botany a mere science of names, than which nothing more useless can be well conceived. The simplicity of the Linnæan system was found to be only a disguise of its superficial character ; it was, in short, a positive and serious evil rather than an advantage ; for Botanists contented themselves with just as much knowledge as was sufficient to enable them to understand the system, and looked no further. The necessary result of this was to render the science superficial and unworthy of the attention of men of enlightened minds.

In France, in which country the merits of Tournefort, to whom I have already alluded, were best understood, and where the system of Linnæus was never very favourably received, this feeling struck deep root. The Botanists of that country saw that a system of classification was not the great end of the science, but chiefly the means by which it could be made available to the purposes of mankind ; that if plants were to be studied usefully, it must be with reference to their every point of structure, and their every property ; that a few vague external peculiarities which had little or nothing to do with the general nature, appearance, or use of vegetables, were the last instead of the first characters that ought to be employed as primary means of distinction. Above all things they blamed the exclusion of physiological considerations from the basis of an arrangement of plants. Let the vegetable world be studied in all its forms and bearings, and it will be found that certain plants agree with each other in their anatomical condition, in the venation of their leaves, in the structure of their flowers, the position of their stamens, in the degree of development of their organs of reproduction, in the internal structure of those organs, in their mode of germination, and finally in their chemical and medicinal properties. These then are the characters that ought to serve as the basis of classification ; and then scientific nomenclature, instead of being a barbarous and unintelligible jargon, becomes, what it should be, the medium of conveying clear ideas of all the

most material modifications of which the vegetable kingdom is susceptible. Let us take an example.—The first of the Linnæan classes and orders is called Monandria Monogynia, and comprehends plants which have one stamen and one style. Now what notion or idea of the nature of the plants comprehended under this Monandria Monogynia can we possibly form, beyond the simple fact that they have one stamen and one style,—a character which has no sort of reference to any one property or peculiarity worth knowing. Contrast with this the natural order called *Scitamineæ*. This name at once conveys the idea of plants with the characters and properties of the *Ginger*, the *Turmeric*, the *Cardamom*, and the *Zedoary*; aromatic herbs, with fleshy roots, and a monocotyledonous foliage and flower, possessing certain peculiarities of structure found in no other plants. The very mention, therefore, of the name Scitamineæ conveys to the mind just as accurate and definite ideas as the most laboured definition.

In conformity with these opinions Antoine Laurent de Jussieu published his “*Genera Plantarum*” in 1789; a work not more remarkable for the excellence of the principles that it advocates, than for the skill and learning with which they are applied to practice. It forms the basis of all more modern systems of a similar kind, and was unquestionably the second great step, *as that of Linnæus was the first*, towards the establishment of Botany upon sound philosophical principles.

The system of Jussieu has been much improved by the discoveries and investigations of succeeding Botanists, many of whom, in his own country especially, are deserving of the highest honours that the naturalist can receive. Among these I may more particularly mention the names of the late Louis Claude Richard, and of the present Professor De Candolle. But, far beyond both these, I must name a living English Botanist*, one of the most illustrious among the naturalists of our day; but to whom, as I think I

* Robert Brown Esq., F.R.S. &c., &c.

see him present among you, I cannot more particularly allude.

With the principles of this system I am for my own part satisfied. It appears to me to answer every end that can be expected or desired; to be the most complete analysis of vegetable bodies that can be contrived, and, above all things, to be essentially founded upon theories of structure, the truth of which cannot be disputed.

And what more, let me ask, do we want? A great deal is said about systems; and many people think that Natural History is nothing more than the amusement of shuffling and cutting natural objects, according to the caprices or particular views of different observers. No mistake can be greater than this. Let us, therefore, pause to inquire a little more into the end or use of systems.

A system in Natural History is, in my view of the subject, nothing either more or less than another word for *the mode of studying animated beings*; and it is of importance only so far as it is important to know what is the best mode of studying Nature.

To be perfect it must comply with both of the two following conditions

It must render the discovery of the name of a given species easy and certain, provided the inquirer is possessed of a thorough knowledge of the structure and properties of that which he is seeking. The importance of this is very great, because without it, it would be impracticable to ascertain the state of recorded knowledge upon any given point.

It must indicate the affinity borne by species to each other, in order that we may judge from analogy of all those circumstances connected with the structure and properties of a newly discovered plant, of which we may be otherwise ignorant. For example, a Botanist ought to be enabled, by the arrangements of his system, to say, from the mere inspection of either the flowers, or the leaves, or the fruit, or any other important part of a plant, what the structure

of those parts, which he has not before him, probably is; and this a skilful Botanist will, even in the present imperfect state of our knowledge, be often able to do with considerable accuracy.

Such is, I think, the whole end and use of systems in Natural History; such is the nature of what is called the natural system in Botany; and such are the principles, which it is my intention to inculcate and explain, rather than that superficial mode of study invented by Linnæus. I am told that in this I shall surely fail; that it is impossible to explain to a Botanical class the mysteries, if they be mysteries, of the natural affinities of plants, and that all experience is against the attempt. But I confess I am not of this opinion. I am ignorant of the insuperable difficulties which are anticipated, and I think that you will never find them. For instance, what difficulty can there possibly be in seeing that the mode of growth of these Palm-leaves, of that Screw Pine, of that *Dracæna*, or of yonder graceful Bamboo, is extremely different from that of the *Rhododendron*, and the *Azalea*, the *Rose*, and the *Pelargonium* which stand before me; or to use a more familiar comparison, that the Oak and the Birch and the Pine-tree grow upon quite another plan from the Grass, the Reed, or the Lily. Any one may see that this specimen of *Coniferous* wood is totally unlike that of the *Palm* wood I hold in my hand. In the one case we see that the growth of every year is indicated by a concentric circle, which is necessarily consequent upon the manner in which the trees called *Dicotyledonous* increase. In this other we find no concentric circles, nor any indication whatsoever of annual growth,—a mode of structure also consequent upon the peculiar mode of development of the trees called *Monocotyledonous*. In the former we have wood and bark and pith distinctly limited; in the latter the wood and the bark and the pith are all mixed together without any distinct limits. In the leaves of the former, the veins anastomose in various directions, forming a kind of net-

work ; in the latter they run parallel with the margin, with no such reticulation. So that the characters upon which this redoubtable system depends, are after all just as obvious and as easily detected, as those of the most superficial mode of study that has ever been invented. Besides this, I cannot do either you or myself the injustice to believe that that which is capable of being explained by me, is not capable of being understood by you ; or that difficulties which I, without an instructor, have been able to surmount, cannot be surmounted by you under the auspices of an instructor. Of this, at least, I am well convinced, that if Botany, or any other science, cannot be taught upon philosophical principles, it can neither be taught, nor is worthy of being learned, upon those which are empirical. At all events we will here make the experiment : and in this new Institution we will see whether we cannot do that in Botany, which others find no difficulty in doing in other branches of science ; whether we cannot redeem one of the most interesting departments of Natural History from the obloquy which has become attached to it in this country, and whether it is not possible to found a school of Botany in London worthy of being associated with those of Medicine, Zoology, and Natural Philosophy.

I trust that in what I have now been saying of the Linnæan system of Botany, I shall not be misunderstood. For Linnæus himself, and for the benefits he has conferred upon science, I yield in admiration to no man ; but, with regard to his system, it is not fitted for the present state of natural knowledge. I do not object to it because it is artificial,—and this I beg to be particularly observed,—but because it is superficial. A system being artificial is, in my view, no defect at all ; the system of natural orders is, in some respects, as essentially artificial as that of Linnæus ; and so will all necessarily be that are to be applied to practice. What I do object to in the sexual, or Linnæan system is, that it teaches nothing, that it goes to nothing, and

that it has uniformly had the effect of paralysing the labours of those who have adopted it; and for these reasons I feel justified in rejecting it.

In the remark upon systems which I have now made, I have referred only to what is practical and applicable to purposes of investigation, and not to those others, of very modern invention, which are really little better than romantic speculations. The authors of these latter are not contented with a system fulfilling the conditions which I have just described as all that are required, but they look to something which they call higher and more spiritual. Some pretend that the affinities of natural objects are perfectly indicated, and can be only usefully studied by the aid of certain signs, and marks, and circles, representing abstract notions, and depending upon an assumed, distinctly progressive increase in what is called perfection of structure; a sort of regular, definite, ascending scale of development, from the simple vesicular creatures which cannot be certainly referred to either the animal or vegetable kingdom, up to some unknown point among flowering plants. Others assure you that they can test the accuracy of all the naturalist's divisions, subdivisions, or combinations, of organic beings, by a certain mysterious number, which according to some is 2, to others 3, to some 4, to others 5, or even 7, and finally even 9. It is very difficult to conceive out of what these speculations, upon the potential qualities of numbers, have arisen. The binarists, or those who fancy No. 2 to be the *Lapis lydius*, or touchstone of classification, have, no doubt, mistaken the commonest principles of analysis for some wonderful discovery. Others have been influenced by the notion that all matter is organized under the influence of certain powerful agents or *cosmica momenta*, as they are called; such as heat, light, earth, or water; and that, *therefore*, at each stage of its development it can never resolve itself into more than the same number of modifications as there are original active agents. I have no intention of entering today into a dis-

cussion of these speculative points; and, perhaps, they hardly deserved notice; but I will crave your indulgence for one instant, while I inquire what such hypotheses *go to*, and how they are proved.

We are told that they convey a certain mysterious and undefinable notion of the works of Nature; and that the highest truths in Nature are only intelligible to those who thus study the mysteries of this *Botanical Cabala*; that observation can furnish no abstract idea of Nature and her works, for observation only skims over the surface of things, and conveys ideas as superficial as our powers of vision are confined; but that internal meditation alone will ever elevate the mind to a state capable of contemplating and appreciating the grand principles of nature. Surely all this is very unintelligible. That some good may be gleaned from it I am far from denying; but that mere fancy should be allowed to usurp the place of close observation in Natural History, is scarcely a doctrine to be readily received. And how are these opinions proved, as it is called? Why, gentlemen, I will give you a few instances. Professor Oken of Jena, a man undoubtedly of splendid talents, is one of those who advocate the doctrine of progressive and consecutive development in Nature from one point to another; and in order to prove his theory in Botany, he is forced to declare that the leaves of those *Palms*, of that *Bamboo*, and of yonder *Screw Pine*, are not leaves at all, but (you will scarcely credit it) mere foliaceous dilatations. He further tells us, that the vascular system of such plants is imperfectly developed; that the Palms, the Screw Pines, the New Zealand Flax, the Plantain, and all those tribes, the vascular system of which produces the most powerful cordage, and the most delicate linen fabrics that we know, have their vascular system imperfectly developed. Another of these philosophers, who thinks that the number 4 exercises some magical influence over the mysteries of Nature, informs us that the usual division of organic matter between the two kingdoms of animals and vegetables is inaccurate, and that there

are in fact *four* distinct kingdoms, viz. *Fungi, Plants, Animals, and Man**. Surely I need not dwell longer upon this.

But let us turn from the consideration of the use of systems in Botany, to a consideration of the uses of Botany itself.

It has been very much the fashion of late years, in this country, to undervalue the importance of this science, and to consider it an amusement for ladies rather than an occupation for the serious thoughts of man. I hear it said that it is of no use, that the ordinary business of the world could go on just as well as if no such science existed, and that it is in nowise applicable to the wants or necessities of mankind. I will not pay you so bad a compliment as to offer any argument in opposition to those who treat Botany as a mere accomplishment; but I will proceed at once to show you that if it is an accomplishment, it is also a science of no little importance to the world.

We behold the surface of the earth adorned with flowers and leaves of every hue and form; we see the rivers, the lakes, the fields, the woods, the hills, the rocks, the mountains, all clothed with verdure, all invested with a rich robe of vegetation, and each peopled with tribes peculiar to itself; we know that the plants which constitute this vegetation are as various in their forms and habits as the animals that live among them; we see that some have flowers, and leaves, and fruit; that others have none of these; that some have lofty trunks that bear their foliage and fruit aloft in the face of heaven; and that others lie prostrate upon the ground in damp and shady places, as if to avoid the light of day. We see that the very same laws that regulate the production of the blue mould that is engendered upon cheese, the green slime that clothes shaded walls, and the gray colouring that incrusts our ancient edifices, are the same as those which control the development of the gayest

* "Die vier lebenden Naturreiche der Erde nennen wir Pilze, Pflanzen, Thiere, und Menschen." C. G. Nees von Esenbeck, *Handbuch der Botanik*, I. p. 12.

flowers of the field, and the most gigantic timbers of the forest; and more than this,—that not only are these laws identical, but the very materials that Nature uses to form such different creations are nearly identical also,—that the mucor, which is the creation of an hour, born one instant and perishing the next, and the hardest teak wood used in shipping, are formed out of the same materials; that the lofty Palms, the tough and gnarled Oak, and the succulent Potatoe, the tenacious Grass and the tender Mushroom, scarcely differ, except in the manner in which they are developed, and in the nature of their secretions. Nothing can be more familiar to us than that a strong analogy is maintained between plants and animals in their mode of propagation; that organic beings destitute of locomotive powers, have the same distinction of sexes as those animals in which the locomotive powers are most perfect; and that the embryo of a vegetable undergoes a sort of successive development in many respects analogous to that of man himself, requiring the same kind of fecundation, which is equally effected by animated particles. Finally, according to Baron Humboldt, the forms of plants, in determining the physiognomy of Nature, also influence in a high degree the moral disposition of nations. (P. N. 5, 52.) We see all these things; we see that they are not the offspring of chance; but that like produces its like, as among animals themselves. And can we doubt that all these things are subject to the influence of certain laws, as wise as those which regulate our own existence? Our daily experience teaches us it would be better for man to be deprived of the aid of the animal world than of that of the vegetable. Our houses, our tables, our dresses, and the very means of communicating to others our thoughts in writing, depend, in a great measure, upon the vegetable world. And if the vegetable world is thus indispensable to our very existence, and if it is really subject to the influence of certain fixed laws, can it be doubted that it is of the utmost importance to the world to be acquainted with these laws? And what is that acquaintance but Botany? I say

then, that however interesting a subject it may be, it is a still more important one.

Can the physician dispense with it? All practice and theory answer in the negative. A large proportion of the medicines upon which the physician is compelled to rely for his means of cure, are of vegetable origin; and of them, numerous kinds are not mere vegetable secretions examinable only by the aid of Chemistry, but vegetables, the organic structure of which is unchanged. How are these to be recognized except by a knowledge of Botany, and, let me add, by a kind of knowledge any thing but superficial; and how without such a knowledge are adulterations to be detected? The physician necessarily depends very much upon the experience and honesty of the apothecary; but the apothecary must rely upon his own personal skill and knowledge of the true characters of the medicines he prepares: in the first place, to avoid being himself a victim to the fraud or ignorance of those with whom he deals; and in the second place, to be able to protect the professional reputation of the physician from similar malpractices. In what way are medical men to dispense with a knowledge of Botany, on a foreign station? In all countries there are diseases peculiar to the climate; diseases, the remedy for which will usually be found to have been supplied upon the spot by the bounteous hand of Nature. If these remedies are of a vegetable nature, as they most probably will be, in what possible way are they to be detected, supposing the inquirer to be ignorant of the nature of botanical analogies? Let us inquire a little further into this. It has been well observed, that science is very much the art of prediction; that one of the most important ends to which it leads is to be able to foretell with accuracy the property of an unknown body by means of one which is known. Now it is a very old notion, but one which daily experience seems more and more to confirm, that there is some direct analogy between the external forms of plants and their medical properties. This was first distinctly

stated by Rudolph Jacob Camerarius, a professor of Botany at Tubingen, who in 1699 published a treatise "*de Convenientiâ plantarum in fructificatione et viribus*:" and it has since occupied much of the attention of medical botanists, who with a very few exceptions have adopted the opinion. The apparent anomalies which have led some to take a different view of the subject, are disappearing as science becomes more perfect; and I think the day cannot be far distant when the medical characters of plants will be introduced as an essential part of the definitions of the Botanist. Under circumstances such as those in which a medical man must often find himself on a foreign station, a power of applying his knowledge of Botany in this way must be of the greatest possible importance. He will know how to distinguish between emetic and narcotic, and cathartic and febrifugal plants, by their botanical analogies; and although he may undoubtedly be deceived, yet his disappointment is more likely to result rather from a want of sufficient activity in the herbs he may select, than from any absence of the principles he is seeking. But more than this; he will not only know to what families of plants he may trust with perfect confidence, in what he may be sure of finding no deleterious principles, if no efficient remedies; but he will also be on his guard against the use of plants of those families in which one thing cannot be substituted for another with equal safety. He would unhesitatingly trust himself to any Rubiaceous, or Malvaceous, or Convolvulaceous, or Cruciferous plant, because he would know that he had nothing to fear from them; but he would be very cautious how he employed unknown species of such suspicious families as Solaneæ, or Urticæ, or Euphorbiacæ, remembering that among the known plants that they comprehend, are species both wholesome and poisonous to man. I have not unfrequently heard it observed, that if our own indigenous plants are rightly examined, we should find that our native land produces medicines as efficacious as those which we import at great

charges from abroad. How this may be, I know not; but this I know, that it is a problem never to be solved without the help of Botany.

Agriculture and Horticulture! Where would these arts be without such aid, especially the latter? Almost every operation that is conducted in them, as far as vegetation is concerned, depends upon the laws of vegetable physiology, and can be explained and understood upon no other. Upon what other principles are we to comprehend the nature of the influence of seasons, of diseases, of heat, of cold, of blights, of mildews, and all the maladies to which vegetation is subject? The gardener knows that one description of plant must be propagated in one way and one in another. Whence was this knowledge derived but from Botany? He knows that the Plum, the Peach, the Apricot, and other Drupaceous fruit-trees require a mode of training and pruning very different from that of the Apple, the Pear, and the Quince. Who told him this? or who in short explained to him the laws of pruning but the Botanist? He finds that the most sterile trees may be compelled to become fruitful, and that this result is to be attained in more ways than one. But how could he have known it unassisted by the Botanist? How could his unassisted reason inform him that decortication in one case, twisting in another, inversion in a third, varying the stock upon which a variety is grafted in a fourth; and, in short, all those simple mysteries upon which Horticulture depends for its very existence, would produce effects, the nature of which could not vary? He knows that he must graft at one season and bud at another; that one description of plant will increase by buds, and another by grafts; a third by cuttings, a fourth by eyes, and a fifth by layers; all operations among those with which he is most familiar. And whence, let me ask, has this familiarity been derived, except from the skilful application on the part of his ancestors, of the laws of vegetable physiology? Nine-tenths of the most important discoveries that have been made in

modern Horticulture, especially the art of regulating and adapting artificial climate to vegetation, are due to the botanical knowledge of the most distinguished vegetable physiologist of this kingdom*; whose successful attempts at applying science to practice have been recently crowned, if I may so express myself, by the complete subjugation of the unmanageable constitution of the Pine-apple. It is in this way that Botany affects Horticulture, which, without it, would have remained till this day what it formerly was,—the mere act of committing seed to the earth, and of reaping the produce. And who, after this explanation, will dispute the indispensable alliance, the inseparable connection, of Horticulture and Botany?

Even legal decisions are sometimes affected most materially by botanical questions. It is not yet five years since the very existence of one of the most extensive of the mercantile associations of this country depended upon a point of vegetable physiology. A proceeding, most ruinous to its interests, had been taken in the Court of Chancery, which would probably have to this hour remained in operation, had not the Company been extricated from its difficulty by the affidavit of a Botanist.

Look at the artist: he may be thought to have as little concern with the minutæ of Botany as any class of men; and yet if flower painting is his object, he cannot possibly dispense with a very intimate knowledge of that part of Botany which teaches the theory of vegetable structure. It is undoubtedly true, that from the general ignorance of society upon this subject, the errors of painters in flower and fruit subjects are less generally detected than they would be in other paintings; but this is to excuse the ignorance of the painter by that of the public. What, let me ask, would be thought by an anatomist? and all men are necessarily more or less acquainted with that science:—what, I say, would be thought by an anatomist of a painter, who distorted the muscles of the human body; who drew a foot with four

* Thomas Andrew Knight, Esq. F.R.S. &c. &c.

or six toes ; who misrepresented the proportion of the limbs ; made the hands reaching to the knees ; who omitted the joints, making the legs and thighs continuous with the body, without articulation ; and who committed an hundred similar absurdities ? And yet, in flower painting, nothing is more common than blunders of exactly an analogous kind. We have flowers with too many petals ; fruit with the calyx at the apex instead of the base ; leaves unarticulated with the stem, inserted in wrong places, opposite when they should be alternate, and alternate when they should be opposite ; the veins of one family upon the leaves of another ; or, which is more common, such veins as no plants ever possessed ; and finally, flowers stuck upon parts where they could no more have grown than a man's head beneath his arms. Surely, it behoves all artists who wish to gain a worthy name in their profession to avoid such blunders ; and this nothing but Botany will enable them to accomplish.

Now, let us consider a little the relation borne by Botany to Geology. It is the province of this science to determine the physical history of the globe, from the remains which its crust exhibits at the present day ; and from the relics of its great catastrophes to educe some positive evidence of the nature of those catastrophes themselves. You all know how successfully this has been accomplished by the mineralogist, the comparative anatomist, and the fossil zoologist ; how interesting the discoveries they have made, and how new a light they have thrown upon some of the most important considerations with which the mind of man can be occupied. But of what avail are all these labours, however meritorious they may be, without the aid of the Botanist ? In the most ancient secondary formations with which we are acquainted, even as it is said in the Old Red Sandstone itself, in which the earliest traces are found of organic remains, impressions of plants are distinguished, thus proving that the birth of animals and vegetables was coeval. In the formations that succeed them, that is to say, in the whole district of the coal-measures, deposits which must have been

the result of ages, not a trace of land animals is to be seen; while those of plants are beautifully perfect. The whole, therefore, of this long epoch, which is the more interesting as it is so close upon the first creation of organic matter:—the whole of this long epoch, I say, would be a positive blank in the history of the earth, without the aid of Botany; for Zoology and Comparative Anatomy find no materials therein on which to exercise themselves. And onward through all those deposits, which are called supermedial orders, lying above the coal, and extending up to the chalk itself, Botany is of a degree of importance in which it yields to no science. The coal-measures indicate the first traces of organic forms upon dry land: at that period the temperate zone was covered with a vegetation differing in many respects from any thing we now know; but upon the whole, having, as a Botanist can demonstrate, an unquestionable analogy with the modern vegetation of the tropics, not a trace of even a reptile remains, much less of a warm-blooded animal; and no other evidence whatever is to be found of the constitution of the atmosphere, or the general condition of the earth's surface at that remote period, than such as is afforded by the study of vegetable remains. And even at a much later period, when an immense variety of monstrous reptiles began to people the earth, the circumstance of no mammiferous animals having even then made their appearance, is perhaps to be explained more satisfactorily upon botanical principles, than upon any others. An accurate knowledge of the nature of the vegetation of all these periods is of an importance to the Geologist which can be scarcely estimated. The study of these is doubtless a matter of great difficulty; but the degree of botanical knowledge, which is indispensable for commencing an investigation of them, is less, I am inclined to think, than is generally imagined. These ancient Floras are so different from those of modern days, that little individual comparison can, in any of the secondary formations, be usefully employed. The Geologist has a Flora of his own, of un-

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THE CLAIMS OF FORENSIC MEDICINE:

BEING

THE INTRODUCTORY LECTURE

DELIVERED IN

THE UNIVERSITY OF LONDON,

On MONDAY, MAY 11, 1829.

BY

JOHN GORDON SMITH, M.D. M.R.S.L.

PROFESSOR OF MEDICAL JURISPRUDENCE.

"Fiat justitia, ruat ———"

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ADVERTISEMENT.

SOME even among my friends have expressed a doubt whether it would be quite safe for me to print the following discourse. *I have printed it*—at my own risk ; and will promote its diffusion by all proper means. If it should be found to contain passages not very agreeable, in certain quarters, I am satisfied that I have spoken “the truth, and nothing but the truth ;” and that I am honestly exerting myself to do “the state some service.”

INTRODUCTORY LECTURE.

MY LORDS AND GENTLEMEN,

CERTAIN recent events, of great national interest, have drawn the eyes of the public upon myself, as having been deeply concerned in them; and I feel that the task I have undertaken, at the present hour, is neither an easy nor a pleasant one. I am resolved to discharge my duty, however, as you have a right to expect of me; and if there should be any among the audience to whom the sequel may give pain, I have not invited them to come here. At the same time I desire to assure them that I have avoided the quotation, not only of names, but even of times and places, any allusion to which might give unnecessary or unmerited uneasiness. But I have to deal, nay I *must* deal, with matters of public history; and the first duty of an historian is *impartiality*.

Having formerly entered, at considerable length, into the nature and objects of the study confided to my direction, I do not conceive it necessary to go over the ground again, upon the present occasion. I have repeatedly taken opportunities, when the public had the power of becoming acquainted with my views, of alluding to the *antiquity*, the *universality*, and the *importance* of MEDICAL JURISPRUDENCE: so that a very few remarks on these points are all that I shall think of troubling you now to listen to.

In the first place, as to its *antiquity*.—I am sufficiently tinctured with the spirit of the present times not to believe in the excellence of any thing merely because it is *old*,—con-

sidering that its *utility* is a better argument in its favour ; nor do I wish to make it out (if I even could) that the writings of Hippocrates and Galen in this department of knowledge have been lost. I suspect that these sages knew as little of the matter as most of our modern luminaries, and that they would have cut as indifferent figures on a trial for committing *the crime of APOPLEXY*, as we have seen other great men do. Of the antiquity of medical aid to Jurisprudence, therefore, I shall excuse you from being told more than that we find there were Professors, bearing the same designation as I have the honour to bear, and books exhibiting the same titles as some of those I have had the temerity to publish, before the world heard of lectures, or knew of any other source of general instruction in sciences which are now considered, and justly so, the indispensable foundations of professional knowledge. In fine, on the score of the old age, and consequent imbecility of my department, I do not claim more than about 300 years. It may be said (though not a native of this country) to have been born in the time of King Henry VIII. ; but I must add, that it is hardly yet out of its English cradle.

Secondly, as to its *universality*.—If we here take into consideration its applicability, I may say indeed that it is *every body's business* ; and if we trace its progress through Christendom, we shall find every intelligent person concerned to know something of it, except the people of this country. There is not a medical school on the continent of Europe in which it is not ranked among the essential business of the student. I believe it is also distinguished in this manner in the United States of North America, whose public institutions, national character and habits, are formed upon European models. In the University of Edinburgh there has been a regius professorship for more than twenty years ; and I have it in my power to say that it is to be included in the curriculum of study enjoined on all candidates for medical honours in that school ;—an example which must, as a matter of course, be *followed* in this metropolis, though I cannot help saying it would be

more to its credit were the example here *to be set*. I have in my hand a printed catalogue of about 10,000 volumes which have been published in this department; and as the book belongs to the library of the University, you can verify the statement at your leisure.

I have said that Medical Jurisprudence is every body's business, which leads me to allude, in the third place, to its *importance*. What is it? What does it consist of? What are the duties which it imposes?—Brief answers to these queries will furnish all that it may be necessary to advance under the head of its *importance*, at the present moment.

1. What is it?—A collateral, but distinct application of the knowledge required for the treatment and cure of disease to the purposes of the due administration of justice and conservation of the public health. Now, justice is the concern of every member of a civilized community, either as its dispenser or receiver; and whenever the issue turns upon a question of anatomy, physiology, pathology, or chemistry, the practitioner of the healing art is obviously the proper guide to an accurate decision. When such a one is brought forward for this purpose, he is the representative of a most important as well as learned body, and owes it to his brethren neither to disgrace them nor himself. He is looked to with the greatest anxiety for correct statements as to the real nature and extent of professional knowledge; and such opinions he must deliver, or will be made to deliver, in simple and explicit terms. Judge and counsel, on these occasions, profess to be uninstructed, and juries are unquestionably so. Nor is it possible for the witnesses to prepare the minds of these for a scientific knowledge of the matter by the advantageous medium of a previous and elaborate course of instruction. The point must be come to at once, and made clear in very few words. Nothing, in the course of my attendance in these practical schools of medical evidence, has struck me more forcibly, or pleased me so much, as the rapidity and precision with which the gentlemen of the law arrive at the object wanted, and the utter separation which they create between the point

in view and the provisos and hypothetical appendages in which the medical practitioner is generally disposed to clothe it. They know well how to fix him to a *yea* or *nay*; and by a simple negative or affirmative he may ruin his reputation, or (I was going to have added) make his fortune; but truth compels me to declare that I do not yet know of an instance in which any of our cloth has risen into repute, by coming under the notice of the public in this manner, desirable as such opportunities ought to be, at least to the young practitioner, and candidate for public confidence.

Again—Justice is the business of every one who may have redress to seek, or be the subject of accusation on the score of wrongs inflicted; and it is peculiarly the concern of every one who inhabits a land, famous, over all its other privileges, for the inestimable blessing of *Trial by Jury*;—a land in which not only has every subject the right of being judged by his equals, by his neighbours, by men in the same circumstances with himself, but where he is liable to be called on to sit in judgment in his turn.

2. What does Medical Jurisprudence consist of?—We shall adopt the term now used, as a general one for an extensive, ill-understood, most curious, and almost *incredibly* useful application of nearly every thing else that is known; and I shall, rather for form's sake than for any purpose of instruction, observe, that it is strictly synonymous with the terms Political, State, and Public Medicine; as the science of medicine, in its ordinary limited sense, of relation to individual interests, is hereby extended to matters of general, statistical, or public importance.

Under this general title we find that two great branches or divisions are comprehended, which are commonly designated *Forensic Medicine* and *Medical Police*. The latter is made up of those subjects which belong to the business of legislating for the public health and safety; and with it, for the present, it is not my intention to engage. The other branch is of more urgent importance, and is, perhaps, less understood: to it, therefore, let me direct your attention.

It relates, as its title signifies, to the occasions on which medical men furnish assistance to the public courts, or in the Forum, as the Romans were in the habit of saying; (and we might with corresponding accuracy designate it the medicine of Westminster Hall). It involves every question connected with injury to the person,—many of life and death,—of property and of reputation. To these, in a short introductory lecture, it would be impossible to make distinct allusion; and I do not know that there is any other term conveying exactly the same meaning. The French have styled it *Médecine légale*, but we lose the meaning of the term by translating it into English. *Legal Medicine* will not convey the conventional signification of *La Médecine légale*; and the Medicine of Law would, though perhaps quite correct, sound strangely in English ears. All I profess, however, on the present occasion, is to undertake a course of instruction in FORENSIC MEDICINE, without affecting to be any thing of a lawyer, though in the course of my studies I have acquired some knowledge of the relationship that the law of England bears to the members of her medical profession, as well as of the use that medicine ought to furnish to law and justice. I have no fear of qualifying those who choose to place themselves under my tuition for giving professional testimony in courts of every description, with propriety, comfort, and respectability, if not even with personal *advantage*.

This naturally conducts us to the third inquiry; viz. What are the duties imposed by this application of medical knowledge?—that is to say, the duties imposed upon medical men. They are two, exceedingly simple in themselves, but, from the way in which they are blundered through, the terror and dismay of the medical world. The first is, to declare the state of professional knowledge; and the second, to acquire the knowledge itself. It is true that in thus advancing the proposition, I have reversed its natural order; for it is necessary, whatever some may conceive to the contrary, first to *learn*; there can be little teaching to the purpose, where this part of the business does not go before the other.

Now, in my estimation, there are few things so easy as to make a respectable appearance as a medical witness in a court of justice; but there are few things of less frequent occurrence. I hardly know how to deal with the fact, that practitioners of the highest repute often go wrong in that situation; and I am almost tempted to infer that a bad witness cannot be a good and safe practitioner. I should not like to have much reason for placing confidence in the bedroom skill of the man who broke down under a legal examination; but it is to be recollected that legal examinations are ordeals few of us like to encounter. Too frequently, however, has it happened that the witness has manifested rather a party-bias than a simple, plain, and straight-forward desire to display the naked truth. It is a pity that a professional man should ever go into a court with any leaning, whatever side he may be employed by; whether a witness for the prosecution or for the defence, he should deal with *opinions* as any other witness will be made to deal with *facts*, tell "the truth, the whole truth, and nothing but the truth." Obliquity even of wish, not to speak of purpose or attempt, is exceedingly dangerous; and I fear that a feeling of this nature has been frequently the cause of that failure of intelligence, that eclipse of the judgment, and that bewildering ascendancy, which have been too commonly remarked, and often severely commented upon.

But, as I have already said, I see nothing formidable in the performance of this duty. I have observed that the object in courts of justice is really to discover the truth of the matter under investigation, and that the parties with whom the issue rests will not venture upon a decision until they have discovered it. In those most important of all cases, where life is at stake, every desire is felt, and every facility is afforded, to know the real merits of the case:—mistakes may be rectified; and no quirk, quibble or technical advantage, is suffered to be made available *against the accused*. If, then, a medical man is, as he ought to be, at all times ready to offer accurate information, he should go forward without

fear ; and if his character be good, and his acquirements respectable, he will meet with no unpalatable treatment.

I have been sometimes grieved as well as surprised at the aspect of our profession upon such occasions. They have too often appeared as if conscious of participation in the odium of the crime, and even more alarmed than the person who is undergoing a trial for his life. In some instances this arises from an apprehension that the prisoner may lose that life upon what the witness may say. Well aware am I that the man, upon whose dictum so great a stake depends, has no ordinary cause for anxiety ; but he has only to avow what he knows to be true, or to admit the deficiency where he has *no* knowledge, in order to guard himself against being accessory even to the *chance* of condemning the innocent. Why should the judge be looked upon as an angry being, placed over us for the purpose of censuring or punishing those who commit no crime ? Our bench is occupied by the most upright, considerate, forbearing and humane characters in Christendom. In them I never could perceive any desire or inclination to molest, harass, or perplex a witness ; but, on the contrary, the most courteous and inviting demeanour has been always observed towards the party employed to furnish the information wanted. And as for the gentlemen of the bar, who are of the same rank in life with ourselves, I must really acquit them also of any wanton or unprovoked severity towards us. They have a duty to perform, one great object of which is to elicit truth ; but sometimes they are obliged to elicit it in a way different from that which suits the inclination of the party under examination. Yet, on capital trials, when cross-examinations necessarily assume an importance far beyond that of ordinary occasions, I have seen nothing terrific, and very little that was objectionable, in the manner even of a *prisoner's* counsel. Depend upon it, if we know how, and manifest the desire, to discharge our duty, there is nothing in reality to be afraid of. I have observed the greatest lenity shown to those who deserved none ; the truth obtained by the lawyer's dexterity, and the unworthy witness suffered to

go about his business without hearing even so much as an insinuation concerning his own shameful behaviour.

How medical evidence should, in my opinion, be given, will form a subject for private and exemplified instruction hereafter.

But it must be admitted, that the duty under consideration is attended with causes of dissatisfaction, in which I most cordially join. It is a severe tax upon the time of the practitioner, who, being subpœnaed to give his attendance, has the alternative of being secluded from his patients for several days perhaps, or of forfeiting £100. Even the remuneration allowed by law is not an equivalent in many instances; for a physician can claim no more than two guineas a-day, and this only in *civil* cases, or when brought forward at the instance of the prosecution. For attending as a witness in behalf of the prisoner, in a *criminal* case, although we are equally obliged to go, we are paid nothing. This being the state of such matters, no wonder that lawyers complain of our reluctance to assist them. It *is*, and must be, the fact: but I think I have devised a scheme by which the difficulty may be got over, and the wishes of all parties be met. Let us find members of our faculty who will make the business of the tribunals their prominent object, not only of study but of practice. To these the legal gentlemen would naturally prefer to have recourse; because, while their advice and opinions would be equally correct with those of other members, they would, without reluctance or difficulty, go forward to declare and substantiate them by *viva voce* testimony, given at once to the purpose. It is neither the number nor the celebrity of the witnesses that does or should carry conviction to the judiciary mind. If *I* (for instance) know a matter of a professional nature to be a fact, in whatever way I may have acquired that knowledge, yet, it being my own, and the opinion I have formed concerning it being given *as* my own and not as that of any other person, I give genuine and conclusive evidence, and my evidence is as good as that of any person of greater eminence. The scheme to which I have alluded has already met the approbation of

lawyers; and among ourselves I have had the satisfaction of hearing the opinion, that such a practice would be a great relief to the profession. I shall dismiss the subject at present, by avowing my own desire and intention to take all fair opportunities of standing between my profession and the public, by cultivating the business of what may be called a *medical advocate*, and endeavouring to prepare such of my pupils as may desire it for the performance of the same.

I shall pass over the advantages that would result did others as well as medical men interest themselves in this study. For my part, I do not see how any man can be fit for the office of *coroner*, without that acquaintance with the nature of medical evidence which a course of instruction in Forensic Medicine alone can afford.

When I appeared in this place about six months ago, on an occasion corresponding to the present, I had a difficulty to contend with that has since been, in great measure, removed. I could then speak of this science as one of whose utility we might have heard a great deal, but of which we had seen comparatively little. It is true that I had cases enough to refer to; but these were either among the events of other times or of other countries, in which few if any of *my* audience felt inclined, perhaps, to take a very deep interest. There could be no denying that such affairs as those of Donellan and Fenning had happened; but perhaps there was little idea that such things would happen again. Society was confessedly wiser—but were medical witnesses so? Had they profited by the examples of the celebrated John Hunter's evidence at Warwick? or the action of arsenic upon steel, as sworn to within these fifteen years at the Old Bailey? No: for ten years and upwards have medico-legal inquirers been writing and talking to them in vain. It is time, therefore, that compulsion should be resorted to for the extension of that knowledge which is confessedly inadequate to *judiciary* purposes. The only compulsion which ought to be thought necessary, is an exemplification of the manner in which the

right application of professional science may be made available;—and of this I now proceed to exhibit to you some specimens.

Two men, in a state of intoxication were left together in a room for several hours, without any witness to observe their conduct; and at the end of this period it was found that one of them was dead, and the other had disappeared. Medical men being called in,—after concluding in the first instance that the deceased had perished by *apoplexy*, formed a subsequent opinion as to violent interference, and murder by *suffocation*. In this opinion they imagined they were borne out by certain external appearances observed in the body. The body was afterwards opened for judiciary satisfaction; and all the appearances then discovered, described and promulgated by them, in a formal and official document, proved in the very clearest manner that the case was one of *apoplexy*, and nothing *else*. Still, however, the charge was persisted in, the party accused was committed to prison, and had to undergo a trial for his life, entirely upon the merits of this sort of testimony. In the short time that elapsed between the first examination and the final issue, very great dissatisfaction was expressed by the medical profession, and even formal discussions were established, in which the validity of these conclusions was completely overthrown; active exertions were also made to prepare a confutation of them, which was rendered the more necessary, as it had been asserted that these opinions were to be maintained on the subsequent trial, merely because they had been put forth, and could not be consistently retracted. Retracted, however, they most completely were, and voluntarily; and I think it my duty to say that witnesses were in court for the purpose of proving that one of the authors of the statement had expressed this intention of abiding by it, for the purpose assigned. The result was, that the prosecution was stopped, and the prisoner instantly acquitted, without being called upon for any defence. In this case I was, without any motive or advantage whatever, but a respect for truth and science, very deeply en-

gaged; and though I have no desire to speak well, and by no means think well of the culprit, I had the most satisfactory means possible of knowing him to be perfectly innocent of the crime of murder, or of any violent interference whatever. It is much to be lamented that men professing to be philosophers should have been guided in the discharge of an important duty by vulgar prejudice and popular clamour, and have drawn public attention to their own incapacity for the performance of this duty. However humble the party suspected may be, he has the same claim upon our candour and intelligence as another; and we are answerable for our conduct, under such circumstances, to the most important of all tribunals—*public opinion*.

The other case, which occurred about the same time, was still more interesting as an illustration for the present occasion, though public attention has not been so keenly fixed upon it. Its merits I shall recite as briefly as possible.

An unmarried female proved with child, and died under circumstances which gave occasion for a coroner's inquest; in the course of which, evidence was given by a person calling himself a surgeon, that she had been destroyed by attempts to procure abortion,—embracing therefore two very heinous crimes, of which one amounted to murder. For perpetrating this murder, a medical man and a female friend of the deceased were committed for trial. The surgeon aforesaid had visited the deceased previous to her death, and administered remedies (one of which was copious evacuation of blood; when the woman seemed, from his own account, to be *in articulo mortis*). He afterwards, in the presence of his shop-boy, opened the body; and having done so, drew up a formal report of the appearances, the statements in which satisfied the parties who held the inquest (which by the way was afterwards quashed as an illegal proceeding altogether), and the prisoners were committed on the coroner's warrant. In this report, and in the oral testimony given by its author, it was alleged that savine and rue had been administered to the deceased, and that '*a dreadful operation*'—

(these were the words)—had been attempted, in consequence whereof she died. This document had the advantage of being read in open court by the writer himself; and being present, I had the felicity of inspecting the original. Of its literary pretensions I shall say nothing; but such medical nonsense could only be paralleled by the other statement, upon which the merits of the case first mentioned hinged. The question of the *savine* and the *rue* was very speedily disposed of by the admission of this witness, that he had not been able to identify them; and we all know that if any effect is to be relied upon, they must be given in large quantities; while even then the primary effect will not be that of producing abortion. The affair was thus left to hang upon the '*dreadful operation*.' The performance of this was inferred in a most curious manner, which I hope I shall be able to make you all understand. Although the witness admitted that he had drawn his conclusions more from '*what he had heard than what he had seen*' on the occasion, his observations ought not to escape exposure.

They were recorded both negatively and positively; for he stated that 'he examined most particularly, and could not discover any catheter or instrument to draw off the water had been passed or previously introduced.' Here is an inference indeed—much such a one as would be made by a man, who, after looking 'most particularly' over London bridge, would say that he could not discover [that] '*any wherry or other boat had passed through the centre arch, three or four days before*.' But on one side of the womb there were indentations *as if made by a blunt instrument in the first instance*; and on the other there were '*five distinct punctures, made by a sharp instrument*'! Notwithstanding all this, however, there had been no ABORTION, the uterus having been found with its entire peculiar contents, as would be the case at the stage of pregnancy to which the unfortunate woman had advanced.

Now, let me appeal to every medical man here or elsewhere, whether if abortion be undertaken to be procured by

a person of scientific skill, through the means alleged, there is any risk of failure? Society is more indebted to our caution and integrity, than they are aware of. In this case, however, there was no trace of any such interference; and whether the woman died of inflammation excited by the administration of powerful drugs, by unskilful treatment, or other improper management, it is clear that no attack had been made upon the ovum. But this is not all, the uterus itself having been removed from the body and preserved in spirits, was produced in court, and submitted to the inspection of eminent medical men, who declared that the alleged wounds or punctures were merely the openings of natural ducts belonging to the organ, which presented exactly the appearances that would be found in any impregnated uterus at the same period of gestation.

I apprehend, Gentlemen, I have said enough to rouse even your *indignation*; and I will not affect to conceal that I felt no ordinary, and do still feel considerable exultation at these triumphant victories of skill and science over ignorance and presumption. The matter was the more satisfactory,—perhaps I may say even brilliant,—as the discomfited parties were reduced to the necessity of confuting themselves. I have little hesitation in saying, that had the original depositions in these cases been allowed to take their course in a way, in which it is to be feared there have been too many examples, three innocent persons would have been doomed to, and no doubt must have suffered, an ignominious death,—for which the errors of medical men would have been justly held responsible. The awful nature of the consequences it would not be for me to depict, if I could; but the first would have been the raising of the public voice about the errors, and the next, universal indignation to the end of time. For my own part, I have felt it my duty to lay very strong statements on these occurrences before His Majesty's Government, which have been received in a satisfactory manner, and of the results of which I have little doubt the public will in due time have the benefit. One of these persecuted and innocent

individuals has been here to express his thanks, and is now in this theatre; *a living and a grateful man, instead of lying a dismembered corpse on the table of the anatomist.* But we require no thanks; we want to do good, by extinguishing error, banishing prejudice and ignorance, and raising truth, knowledge, and common sense to their proper level.

Perhaps this may be the last opportunity I shall seek of recommending Forensic Medicine to public notice. Arguments, if now offered in vain, must give way to practical illustrations; and these I have now displayed a very simple method of obtaining. It is my design to bring those who are styled the guardians of the public health before their country, in order that they may prove the worthlessness of Medico-legal study, by displaying how very much they themselves can speak to the purpose who neglect or despise it. If these parties continue insensible to the force of truth and the influence of necessity, I promise you that every member of certain *courts of examiners* shall stand an examination himself in a *court of justice*, before twelve months pass over. All this will be affected by very simple machinery;—an interview with an attorney, a subpoena, and a few suggestions to counsel, will be perfectly sufficient. Let those who are placed in conspicuous situations, for the express purpose of directing the studies of young men to essential objects, attend to the duty of enlarging the limits of professional acquirements: let it be no longer optional but imperative, that the candidate for admission to practice shall be qualified for the discharge of his duties under the critical eye of the public. Why this absurd perseverance in a course of neglect, which distinguishes the medical schools of this country from those of all others by a glaring and remediable defect? Have we no tribunals? Are medical men in this country never required to go before them? or, when they do go, are they found to display an almost miraculous knowledge of their very peculiar business? Or, again, do they feel so easy and comfortable on these occasions, as to supersede all necessity for thinking

about what they are going to say? Is it to *me*, the only teacher at present in a state of activity, that they object? Do they consider my pretensions shallow, and my proposals vain? Do they understand either? Have they taken any pains to satisfy themselves that there is nothing in them? Have they read my books, and discovered the doctrines contained in them to be erroneous, or the facts adduced in support of these to be false? If they have *already* done this, and decided that I am unacquainted with and incapable of performing my duty; or if after a personal examination (which I am ready to submit to, if proposed in a proper manner) they should *come* to such a conclusion,—notwithstanding the opposite decision of the council of this University, consisting of a large body of noblemen, and gentlemen of the first rank and education in the kingdom,—still the advantages resulting from *the study itself* ought not to be sacrificed. No sooner will the *fiat* issue from the Royal College of Surgeons, and the Company of Apothecaries, than there will be teachers in every school. You are here offered, for a sum of money, very insignificant indeed—a few shillings—and upon the easy terms of an occasional hour's attendance,—what I may honestly say I have not been able to qualify myself to accept the situation in which it can be offered, under the expense of many hundred pounds, and the devoted labour of most of the best years of my life; but I would rather instruct you gratuitously, than be myself subjected to observe the lamentable exhibition which almost every medical witness makes in a court of justice.

I did hope that I had successfully combated an error which was for a long time a favourite one among medical teachers; but of which I have recently discovered that the remains exist.

It refers to the vain, fruitless, and almost presumptuous attempt to teach Forensic Medicine in a desultory and incidental manner, by distributing its divisions among the lectures given in other departments of medical education. I have no approbation to bestow upon such pretensions, for they

must prove worse than a failure. If the parts of this well connected science are disjointed in this manner, their relations must be lost sight of; and it has been well remarked, that there is no science which admits of a more natural method of arrangement. Who, for instance, among the teachers of other branches, is to go out of his proper path in order to study the nature and application of medical evidence—under which title alone a course of lectures might be given with great utility? It is enough for every teacher to mind his proper province, and devote himself to his professed business. We have had too much of that universal sort of professorship in London; and in my opinion (by no means a singular one), the injunction might with great propriety be given, ‘*Divide, et doce.*’—I have listened, with equal surprise and disgust, to the lessons of a great surgeon in this metropolis upon the treatment, and even the detection of poisons, and I have traced the despicable consequences of these lessons afterwards into courts of justice. Depend upon it, this is a distinct application of the medical sciences, mistakes about which are almost certain to take possession of the minds of those who neglect it, or who do not pay even considerable attention to it; and it is not because a man is successful as a physician or surgeon that he must be a Medical jurist.

Another suggestion I beg to advance while upon this subject. All that is necessary to be known cannot be acquired from books. They are excellent for recalling ideas and refreshing the memory; but Forensic Medicine requires numerous practical illustrations that books cannot exhibit. There are objects for every sense, as well as for the judgement, and a necessity for acquiring no small share of manual dexterity, as well as acuteness of observation and accuracy of inference.

I am now about to make a very startling assertion, and I certainly would not make it if I were not able *to prove it*—as my friends of the law would say.—I do not believe there is a medical man educated in England who can open a dead

body, certainly not one who could name the instruments required to perform this operation—for judiciary purposes; unless he may be found among my own pupils, or those of my friend Professor Christison of Edinburgh. Some time ago I offered to instruct certain medical officers how to do this with great advantage and convenience;—but what answer did I receive from their local chief? Why this—That the thing was impracticable according to my plans, and quite out of the question. A thing which I had done and caused others to do over and over again with the greatest success and satisfaction, dexterity and facility, this gentleman pronounced to be an *impossibility*, because *he* had never heard of it! Such an example I feel it my duty to quote as illustrative of ‘*the good old school*,’ a school which I fear never had to boast of a proper *master*, or if it had, much I fear me, he had not the art of instructing his scholars, as we intend scholars shall be instructed *here*. Our schoolmasters have by this time given some proofs that they have gone abroad without wandering from their proper provinces; and they do not pretend to that ineffable degree of wisdom which obliges its possessor to believe that there is nothing left for him to learn.

Another illustration I must attempt upon this yet litigated point. Show me the medical man; even the chemist, the botanist, or the physiologist, who will so pursue the detection of a poison in the human body, as to instruct a court how to come to an unimpeachable decision, on the merits of such a case of accusation. There never was a trial, arising out of a charge of this nature, in which there was not either a conflict of medical testimony, or an unsatisfactory result of some kind or other. Look to the case of Donellan. Upon the coroner’s inquest, some of the medical men deposed to the administration of arsenic; and afterwards, on the trial, endeavoured to prove that the poison had been laurel water, *alias* Prussic acid. Shall I give you, in half a dozen words, my view of this celebrated affair? Take it as follows: Donellan was guilty. He poisoned Sir Theodosius Boughton by

administering Prussic acid, but medical evidence was only contributory to the proof; the *lawyers* convicted him on the evidence of circumstances, and there was not a medical witness for the crown who had not been led into the channel, where he formed his opinion by the circumstances of the case. The renowned, and in some respects *justly* renowned, John Hunter, went down to give evidence, as to general facts, in behalf of the prisoner; whom he not only was unable to save, but returned from the occasion with an impaired opinion of his own pretensions. After this, let no man sneer at medical jurists: we may not be the most *learned* people in the profession, but we claim some credit for being entitled to a place among the sensible and *inquisitive* portion of it.

One more example, in the department of *poisons*, shall be sufficient. Let me make a short allusion to the case of Fenning. This was a young, rather attractive, and consequently, perhaps, somewhat petulant female, who was tried, condemned, and executed in 1815, for administering arsenic to a whole family with intent to poison them. I believe her to have been no more guilty of the crime laid to her charge, than I myself was, who, at the period of its alleged perpetration, was in a foreign country. She was convicted upon the evidence of somebody belonging to our profession, who swore that arsenic would blacken steel, if applied to it; and who did not say so at a stupid coroner's inquest, but went to the Old Bailey, and there left this precious sample of evidence upon record, as given by him on a trial for life! Unfortunately, in those days, the idea of a University of London was unimagined, and there was no medical jurist at hand to make him consider what he was saying. That arsenic will blacken steel is no more true than that it will whiten ebony; and this I have demonstrated over and over, exhibiting the very circumstances of this unfortunate case, to audiences of a thousand persons likely to sit upon juries, in order that such a thing might never happen again;—and *for* doing this what has been my reward?—*the persecution of the worthless part of my own profession.*

The last argument I shall adduce for the purpose of silencing this unphilosophical nonsense about patch-work and piece-meal substitutes, for the important duties of a Medico-legal chair, shall be, that no two individuals who have studied the subject differ in any one opinion or point of real importance. In what other department of medical science can this boast (if it be one) make good its pretensions? It is an old proverb that 'Doctors differ'—but medical jurists *do* not; and (what is more), cannot differ. Away then with the presumption of attempting to oppose the introduction and progress of a study which promises to do more for the true respectability of the profession than any thing they have hitherto imagined. Let us not hear another word of what this person can do for *his* pupils, or the other for his *own*. I stake every thing I value and hope for upon the accuracy of the assertion that its pretensions are yet unknown, though its importance begins to be acknowledged, and shall most assuredly be *felt*.

I cannot dismiss you without offering a few reflections on the peculiar subject of *medical evidence*. This is very imperfectly understood, even among lawyers. Though I have acknowledged myself to be an admirer of the tact these gentlemen almost uniformly display in eliciting the truth, upon common occasions and from the general run of witnesses, I have observed that they often fail in ascertaining the real state of a medical man's knowledge, or rather in exposing the real state of his defects. In some instances I am aware that they feel a deference towards the established character and *ex-forensic* eminence of the individual, and are disposed to rate his pretensions higher than they most assuredly would those of any other party upon a corresponding occasion. This is courteous, and upon the whole, just: but sometimes a great man goes into court, and makes but a small-witness; he speaks perhaps with great address, but very little to the purpose; he throws himself upon the support of unintelligible terms, and if compelled to give an explanation, explains

them in part only, or gets off by declaring that explanation is altogether impossible. But it is not because a man is great in any department of medical science whatever, or because he is eminent in any branch of medical practice, that he can discharge his duty well in a court of justice.

There cannot possibly be a greater mistake; but I believe there is hardly one under which people concerned in these matters so universally labour. It has been the fashion to treat this matter with great indifference; for many practitioners have gone through life without having been subjected to those calls which public justice may at any time make upon any one among us; and others, who have been obliged to make their appearance under these circumstances, have been suffered to say almost what they pleased, and have gone away satisfied that they had done all that was required of them. As far as this metropolis is concerned, I think I may go the length of predicting that such will not be the case in future. Having established some connection among gentlemen of the *legal* profession, they will now be less in the habit, perhaps, of resorting to celebrated members of ours, when cases occur that turn upon medical opinion, in order to ascertain what is really the state of our knowledge on any particular point. This, whether from study, intercourse with medical acquaintances, observation, or personal experience, any intelligent member of it will be able to satisfy them concerning; and not only so, but to point out the individuals whom they ought to produce in court *to prove* this. Such things have been begun—and similar things we purpose to continue to do: nor will it signify, in the slightest degree, whether the medical witness be disposed to corroborate our opinions or not; for if we know what the fact is, we shall find it a very easy matter to make him admit it, if he also knows it, or to confess that he does not know it, or at any rate to deny it; in which last case we shall be prepared to give counter-evidence in a very effective manner.

But, that the whole body of the profession may not be

thrown into an unnecessary state of alarm on this subject, let me state what will be the just and equitable, as well as the prudent and advantageous, course to be taken. Such appeals should be made to teachers and examiners—to the medical officers of medical institutions—to those who profess to know most about this business, and being set (in whatever way) upon a hill, neither can nor ought to be hid. To these, therefore, we shall naturally have recourse; and as the examination of this highly respectable and most intelligent body will take up some months, others may, in the interval, prepare themselves to supply their places, by the time the lawyers shall refuse to have any thing more to do with them.

Gentlemen of the Law,—Suffer me to address a word to you before we part, hoping that we shall do so in perfect good-humour, although I am inclined to think I could give you a lesson, and in the article of *evidence* too. You possess, in great perfection, an art which I would fain do something to banish out of practice,—I mean the art of tormenting us of the medical schools. I have therefore to *beg of you* now, (as it will be your turn afterwards to ask questions of *me*), that you will consider a little the meaning of the term *experience*. Yes, *experience*. If you will look into the writings of our best moral philosophers (which the author of a work entitled *An Analysis of Medical Evidence* has done for you), you will find that there are two kinds of experience—‘personal’ and ‘derived;’ the former being the sort of experience which is ordinarily termed *original*, but the latter by far the more valuable and extensive. If we are to restrict the limits of experience to the mere casual occurrence of observation *in propriis personis*, every time that this receives the preference, we go back to the very foundation of knowledge, and throw down the whole superstructure which the labour and research of ages have been employed to rear. The knowledge of medical science, and even of medical facts, becomes our

own the moment we gain possession of it; and when we are in possession, we are in a state of perfect conviction as to the truth of what we have acquired: consequently, we give our own opinions, though we may entertain them in common with thousands of our predecessors and contemporaries. Let me entreat you, therefore, to attach less importance to individual experience, which we have had sufficient examples to show may be good for nothing, and to have a little more regard to *authority*. This is a word which commands you all; and if it be of such value, why do you claim the exclusive right of monopoly? We have a variety of sources by which it is our duty to obtain professional knowledge, of which naked experience is far from being the best. "It has been customary," among you, "to estimate that witness first who vaunts highest of his experience." Frequently also a witness is examined as to *the extent* of this qualification; the meaning of the word being restricted in all cases to what he has himself seen or accomplished. Dr. Campbell observes, that "what has been rightly perceived may be misremembered; what is rightly remembered may, through incapacity or through ill intention, be misreported; and what is rightly reported may be misunderstood. In any of these four ways, therefore, either by defect of memory, of elocution, or of veracity in the relater, or by misapprehension in the hearer, there is a chance that the truth received by the information of the senses may be misrepresented or mistaken." "And your man of mere experience is a man of information through the senses only. It is very possible, therefore, that he may be inferior as to knowledge and intelligence to the diligent student; for an accidental observer may be unqualified to make use of his opportunities, while the other may acquire much information, without going beyond the labours of others. The man of experience, moreover, has to labour as much, single-handed, as all the rest put together, ere he can equal them in pretensions; while the student again may have opportunities of experience to a minor extent, but will

make a vastly better use of a few than the uninformed can of many *."

And now, my Lords and Gentlemen,—having occupied as much of your time as could with propriety be done upon such an occasion, permit me to return my dutiful and respectful thanks for your attention and encouragement; and to take leave by alluding to one circumstance which, in justice to myself, I think ought not to be passed over in silence. It has been said of me (both at home and abroad), that if there be any merit in making known the important science of Forensic Medicine to the English public, I may lay claim to it; and I should know very little indeed about it were I not fully aware, that when I took it up it could hardly be said to have an existence among us. I dare not boast of it as a discovery (in fact it has given me cause to boast of nothing but disappointment), but I do assert that I have made it *an English study*; and I promise, if duly supported, to advance it further towards perfection. I have not merely translated or compiled from foreign authors; I have gathered facts from every source,—from reading, correspondence, travelling, and observation; and having collected these, I found that the most useful lessons were to be derived from, and the most important doctrines founded upon them. With all due respect for, and taking all fair advantage of, the labours of others, it has been my object to assist the institutions of *my own country*. I am still willing to hope that I shall have much important work to perform ere I attain the celebrated age at which the progress of improvement has been almost proverbially said to stop; and if so, to furnish at least one example of an exception to a rule, to which there are numerous exceptions now present. However it may fare with myself, I think it does not require prophetic

* Analysis of Medical Evidence, by John Gordon Smith, M.D.
page 122.

powers to perceive that this Institution (speaking of it now in the most comprehensive sense, and not restricting the view to any one department in particular) will shine with a splendour and advantage of which little has hitherto been known: and it is my fervent prayer that its light may continue to be mildly and steadily diffused, either till the night of eternity shall darken the world, or these beams of intelligence be absorbed in a brighter effulgence!

THE END.

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